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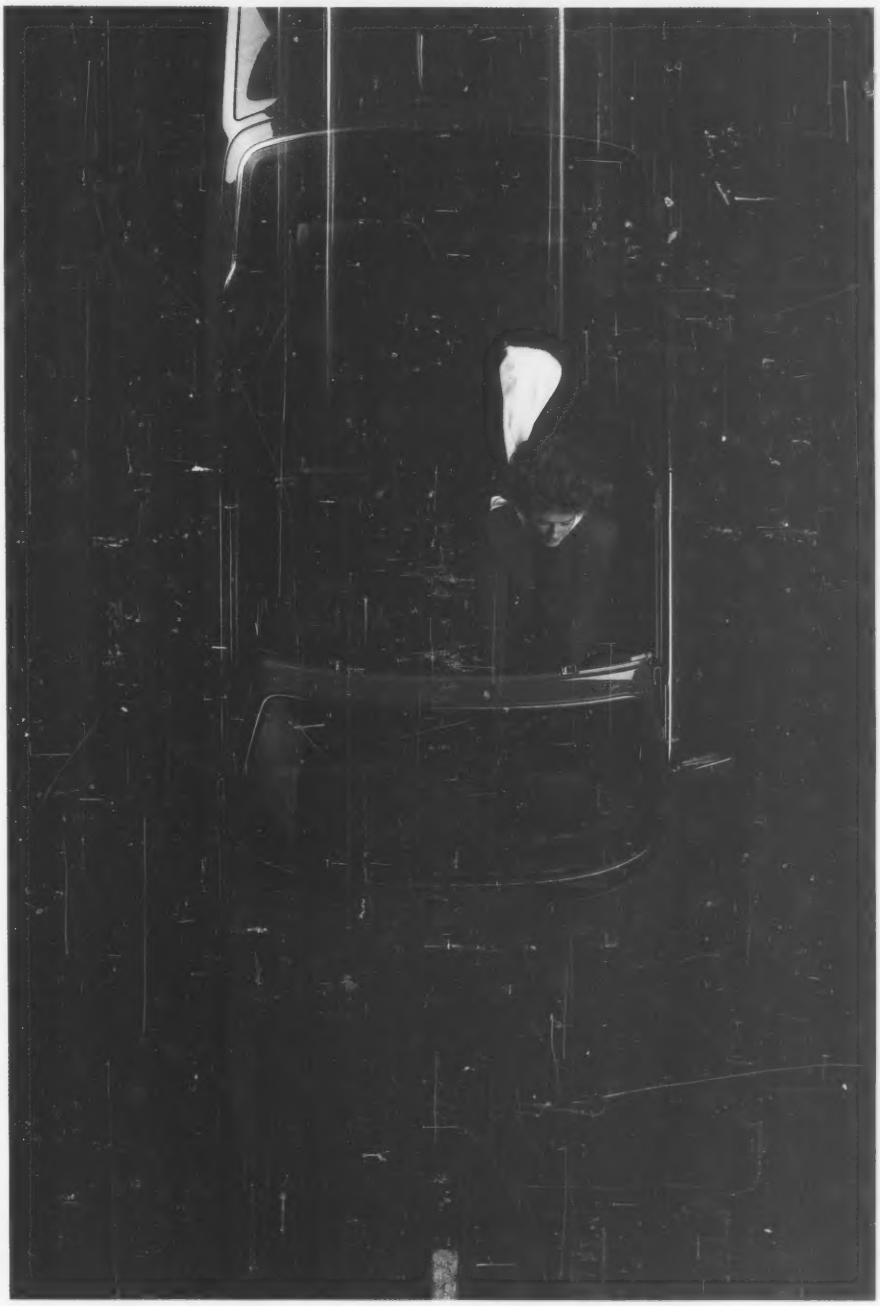
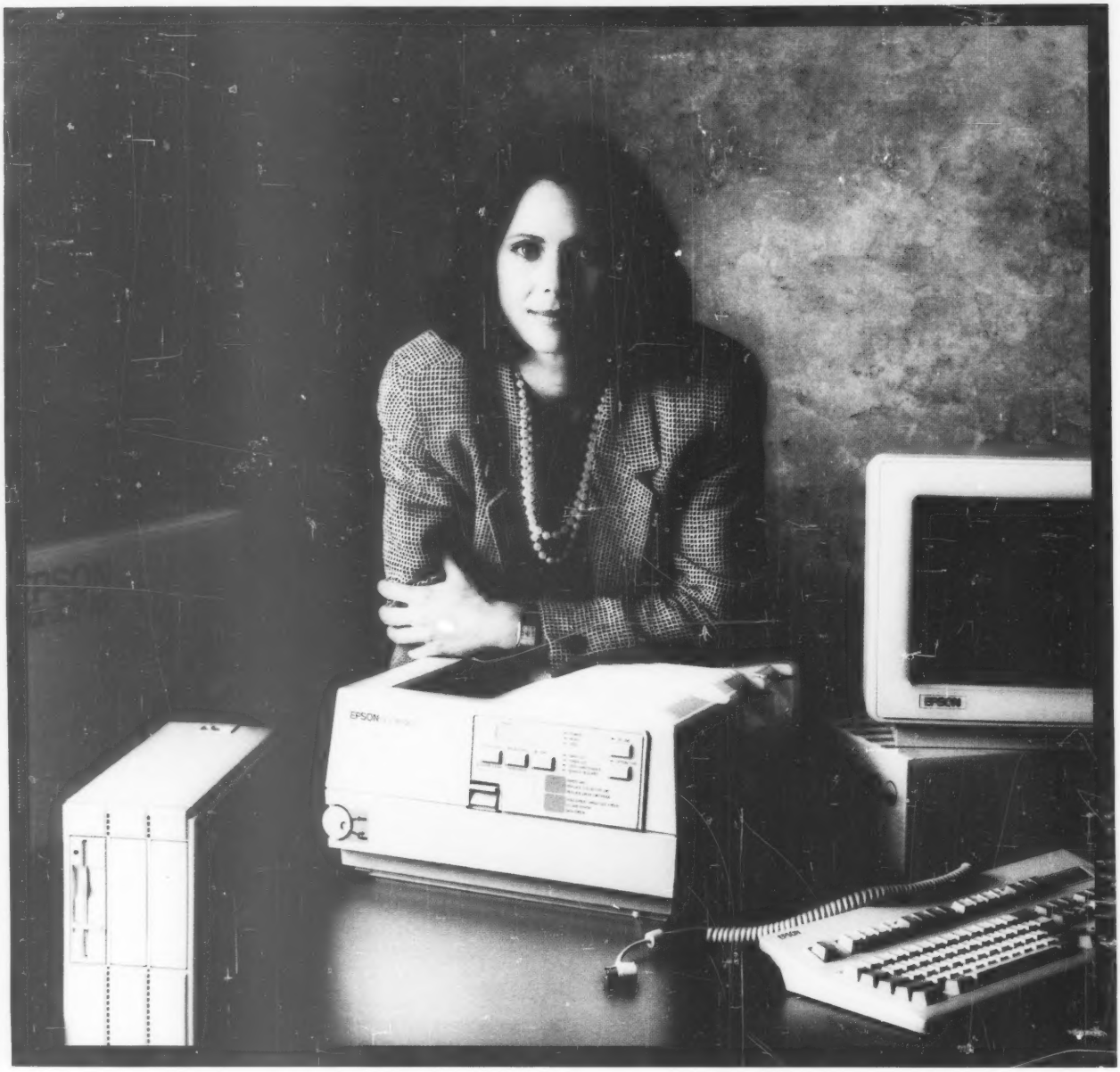
# COMPUTERWORLD

## FORECAST '88



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FORECAST '88

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# Inventing the future

## *Seers find favor in business community as corporations seek strategic technology*

BY MITCH BETTS

Don't look now, but there could be a futurist in your future.

Users and vendors in the computer community are turning to outside consultants who specialize in "futures research" to help with the eye-glazing task of strategic planning.

It has always been easy to ridicule futurists for their fuzzy philosophies and outlandish predictions of disposable clothes and nuclear-powered aircraft. But some Fortune 500 corporations are shelling out cash to futurists in the hope that they can help identify competitive opportunities and potholes in the road ahead.

Furthermore, since they tend to be generalists, futurists can help MIS managers put information technology in the context of other societal changes, such as trends in the economy, demographics and government policy.

"Any profitable company that wants to stay profitable has to plan for the future," says Jeffry A. Alperin, assistant vice-president for corporate technology planning at Aetna Life & Casualty Co. in Hartford, Conn. To that end, Alperin uses the services of The Futures Group in Glastonbury, Conn., and the Institute for the Future in Menlo Park, Calif.

Planning for the future does not mean predicting the future or even preparing for it, Alperin says: It means *inventing* the future.

"Aggressive companies are thinking about how they're going to mold the future. The dialogue [with futurists] is about who's molding the future now and who might mold the future next," he says.

Although it is hard to describe tangible benefits from the use of futurists, Alperin says the consultants helped his office with research work on expert systems and electronic information services such as videotex.

The corporate offices most likely to use futurists are business planning departments and a relatively recent addition to the corporate organizational chart — technology planning departments.

"Maybe five years ago, we planned technology less coherently. Now, the corporate planning department and the technology planning department are much more closely aligned," Alperin says.


RICHARD OSARA

One beneficial role for the futurist is to act as an interpreter, or liaison, between business managers and MIS managers, according to Richard Adler, director of the teleservices program at the Institute for the Future.

Interest in futures research is apparent in various parts of the computer community. For example, MIT has a 17-part program to study MIS management in the 1990s, and the Diebold Group, Inc. has developed a model of the computer industry in the 21st century [CW, Nov. 16].

The futures business is not booming, however. The Center for Futures Research at the University of Southern California closed down in 1987 because of a lack of financial support. "Farsightedness is simply not in fashion," the center reported.

While U.S. corporations are aware that their environment is changing rapidly, they have also "become very short term-oriented," according to Edward Cornish, president of the World Future Society in Bethesda, Md.

"They feel like they've got to get through the present [financial] quarter and the next quarter. They can't think too much about the long term when they've got some takeover artist on their tail," Cornish says.

He estimates that the number of futurists employed within corporations will rise from less than 200 in 1960 to 4,000 by 1990, while other firms turn to outside think tanks and consultants.

But Cornish acknowledges that there are no hard statistics on the number of futurists, in part because they rarely use the title of futurist. "You never know where there might be a futurist lurking under some title" such as vice-president of corporate planning, he says. In addition, those who call themselves futurists can range from amateur "future-oriented thinkers" to scholarly professionals.

David Pearce Snyder, a consulting futurist in Bethesda, says the computer industry, including IBM and Data General Corp., made heavy use

*Continued on page 4*

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| AZ | Phoenix | Jan 28, Feb 25, Mar 24 |
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# Inventing

CONTINUED FROM PAGE 2

of outside futurists in the early 1980s. But futurist contracts with computer vendors took a nosedive during the industry slump that lasted from 1985 to 1986. The budget for consultants is the first thing to be cut during a financial crunch, he says. Nevertheless, some segments of the economy are eager to hear what futurists have to say. The biggest users are the health care industry, the heavy manufacturing industries, the education and training community and even some government agencies, Snyder says.

The health care industry, which is struggling with a variety of cost-cutting pressures, will be hard hit in the 21st century, when there will be a tremendous increase in the number of elderly people who will require health care, he says.

He predicts that there will develop a move away from expensive hospital care and toward more home-based medical care using high-tech monitoring and diagnostic devices.

Organizations turn to futurists "when their back is to the wall" and nothing else seems to work, Snyder says.

Manufacturers started to use futurists in 1985 and 1986 because their companies' huge investments in automation in the early 1980s did not pay off

Edward Cornish

in big productivity gains as they had hoped, Snyder says.

"They realized they needed some advice on how to sustain a long-haul commitment to technology," he says.

Government agencies have become more attentive to futures research because they now realize that major budget cuts will soon force them to increase their productivity by making better use of information technology, futurists say.

For example, a 1986 report by the U.S. Congress's Office of Technology Assessment listed a variety of information technologies — from expert systems to computer conferencing — that could be adopted by federal agencies. Contributing to the report was a futurist think tank, J. F. Coates, Inc. in Washington, D.C.

**Automation blues**

Joseph F. Coates, president of the think tank, warns that the single biggest threat now facing the computer community's future is the failure to understand the effects of office automation on workers.

For example, office automation radically changes the flow of authority and responsibility in an organization. "It isn't a matter of information flowing up or down anymore. Now you have information flowing in networks, in any direction the worker wants it to flow," Coates says.

In addition, he says that many vendors and office managers have ignored the importance of ergonomics, such as comfortable chairs and desks and proper lighting for VDT users.

"For the next decade, one of the biggest concerns of the Occupational Safety and Health Administration is going to be improving the white-collar workplace," Coates predicts. "But the industry has chosen to ignore looking at that."

**Indifference**

MIS managers and vendors are indifferent to the concerns of employees using computer systems, Coates charges, "because it's technicians selling to technicians."

One group that is trying to understand the broad human

David Pearce Snyder

implications of the information age is the Information Industry Association (IIA), a trade group for information service companies.

**The single biggest threat now facing the computer community's future is the failure to understand the effects of office automation on workers.**

The IIA's decision to start a futures research project can be traced back to a 1985 speech by Robert Weissman, president of Dun & Bradstreet Corp., who challenged the industry to ensure that the information revolution is a boon, not a bane, to mankind.

He encouraged the IIA to focus what he called "the long-term direction of our industry and the public policy framework in which it can most effectively operate for the good of all."

The first major step in that project was to sponsor a report, "The Information Millennium," by Clement Bezold and Robert L. Olson, both members of the nonprofit Institute for Alternative Futures in Alexandria, Va.

**Four views**

The four alternative scenarios for the year 2000 presented in the report range from the optimistic to the pessimistic (see chart lower left). There is the technology-dominated scenario driven by a booming economy and a scenario in which technology is harnessed for personal growth and social advancement.

On the gloomier side, there is the aptly titled "Things Bog Down" scenario and an authoritarian scenario similar to George Orwell's *1984*, in which a Big Brother government uses technology to watch and control its citizens.

In each case, the futurists consider plausible trends in technology, the information industry, society and government policy.

For example, each scenario addresses the effects of artificial intelligence, hypertext, systems interoperability, cultural values, the world economy, proprietary rights, computer literacy and privacy issues.

The report provides background material that should help IIA members develop their own long-term plans for their corporation as well as influence government information policy, Weissman says in the preface.

"The challenge," he says, "is to crystallize our vision of the information millennium and to do what we can to try to bring about the kind of information society that we believe will most fully realize the incredible promise of the information revolution."

## Year 2000: Alternative futures for the information industry

*The next 15 years could be Orwellian, Utopian or something in between*

**High-tech information society:**
Driven by a booming economy, advanced information technologies are rapidly incorporated into new products. Expert systems are used for routine text processing and routine decision making (such as the basic qualifications for a loan). Speech recognition and synthesis are used for order taking and other routine customer interaction.

**Creative society:**
Technological progress is rapid — the same as in the high-tech scenario — but there is a profound change in values. Enhanced productivity is sought not only for financial success but increasingly for personal growth and social advancement. Privacy is protected diligently by industry and government. The big technology breakthrough is in neural networks.

**Things bog down:**
Technological progress is slower than expected and worsened by expensive and tragic failures by artificial intelligence systems in business and the military. Privacy problems worsen. Information gaps between the rich and poor amplify inequalities. U.S. manufacturers lose market share to foreign competition in more and more areas of information technology.

**"1984" and beyond:**
An economic depression, an AIDS epidemic and terrorist incidents lead the public to accept greater government controls and surveillance. A "freedom fighter" underground of computer hackers emerges. Technology advances are driven by government policy. After the depression, businesses rapidly adopt information technologies to enhance productivity.

INFORMATION PROVIDED BY THE INFORMATION INDUSTRY ASSOCIATION AND THE INSTITUTE FOR ALTERNATIVE FUTURES
CW CHART: AMY J. SWANSON

# From chief MIS role to futurist

## *Consultant was once the MIS manager at the IRS*

The career path of futurist David Pearce Snyder is as unusual as it is logical.

From 1971 to 1974, Snyder was chief of information systems at the Internal Revenue Service. After that, he worked as the IRS's chief of strategic planning until 1981, at which time he launched a business as a consulting futurist in Bethesda, Md.

Why go from MIS chief to planner to futurist? For one thing, Snyder got frustrated working with engineers. "I didn't like being the only generalist surrounded by technologists," he says.

But there was a more significant reason: Snyder realized that insufficient planning was causing the IRS to install computer systems that would become overloaded in just a few years, and he felt the desire to design flexible systems that would be able to grow to meet future needs.

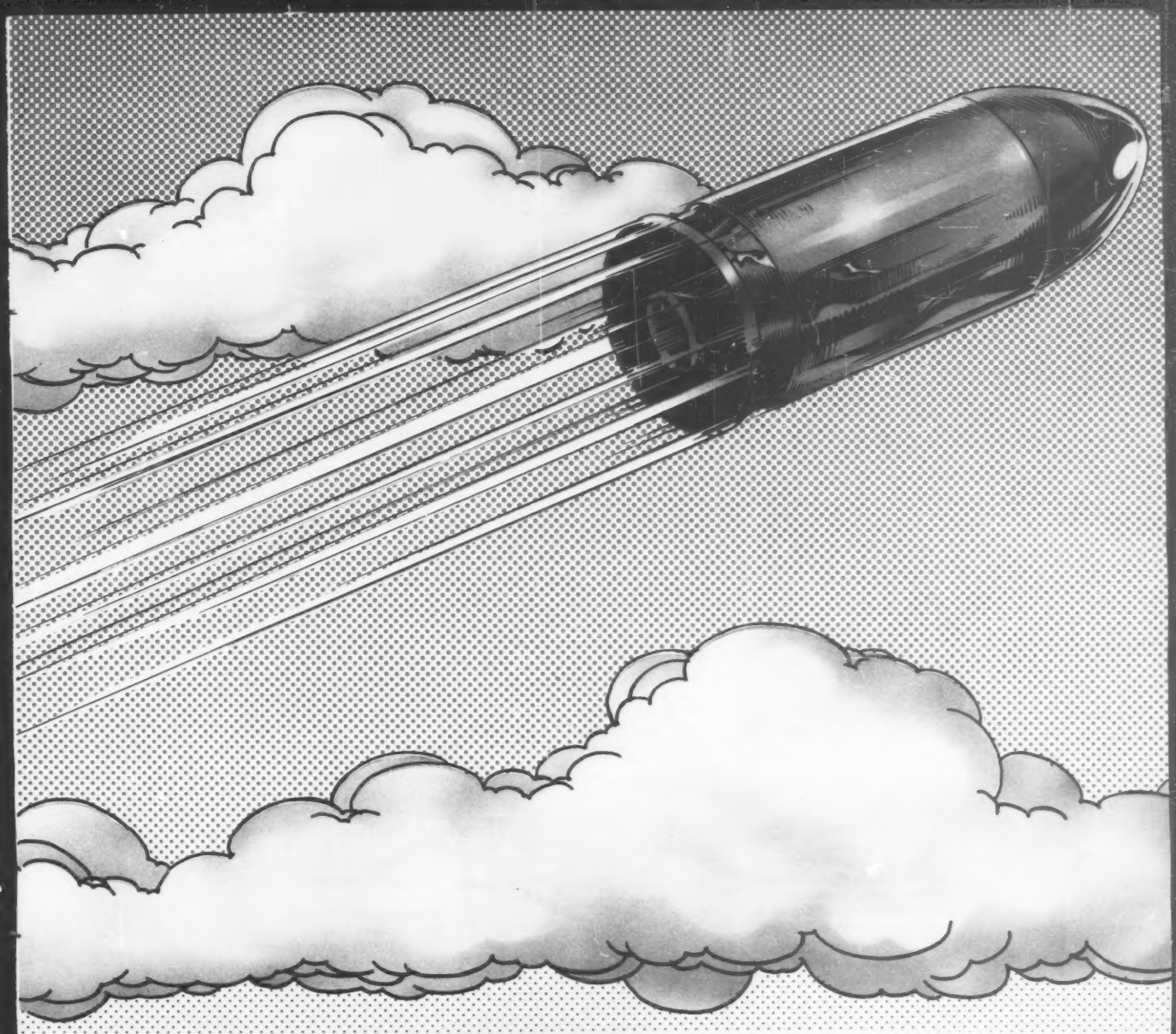
"I became much more interested in figuring out how to better plan for the future, generally," he explains.

In addition, Snyder found that the biggest problems relating to information systems were people problems. "The technology was powerful, but the much greater problem was getting people to understand it and to have the right people with the right skills to use it," he says.

Snyder also scorns those people who focus only on technology as though it exists in isolation.

"A futurist has got to be a generalist, because the world is not a specialized place. The future is everything that's going to happen, not just technology," he says.

MITCH BETTS



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# Economic preview

## *Unless the government intervenes, we may be headed for 'the recession of '89'*

BY ALAN ALPER

The stock market crash of Oct. 19, dubbed "Black Monday," is expected to have a rippling effect on the nation's economy in 1988 as consumer confidence wanes and economic growth slows to a trickle. The situation could lead to an outright recession in 1989, unless the U.S. government takes quick remedial action to bolster its sagging economy, economists suggest.

Most economists, however, say the stock market slide was a reaction to — and not a cause of — the declining value of the dollar and intractable U.S. federal deficit and trade imbalances.

Historically, downturns in the nation's economy have caused many companies to place strict limitations on information systems spending. In the past, many chief executives viewed information systems as an expense item, not a vehicle for competitive advantage.

"Information systems were viewed as fat, as opposed to muscle," notes Eric Knutsen, managing parter of consulting services at the Gartner Group, Inc. in Stamford, Conn.

Although many companies now embrace information systems as competitive weapons, the weak economic prognosis for 1988 may not bode well for MIS. Top executive support may waver.

"Much of what is said is pure rhetoric," Knutsen says. "The historical view still prevails in the corporate suite."

Weak consumer spending and increased inflation in the U.S. were two telltale signs of impending economic trouble prior to October's "Black Monday," the memorable day the Dow Jones industrial average tumbled 508 points, losing one-quarter of its value and leaving investors with an estimated $1 trillion loss on paper. The heavy losses have also undermined consumer confidence, which economists say could translate into a weakened economy late in 1988.

The possibility of a worldwide recession hinges almost entirely on the extent to which the U.S. can trim its budget and trade deficits, economists emphasize.

RICHARD OSAKA

White House and congressional negotiators have agreed to measures that would reduce the estimated $170 billion U.S. budget deficit by some $30 billion this fiscal year and an additional $45 billion next year, figures that exceed the mandatory deficit reduction of the Gramm-Rudman-Hollings law.

What remains to be seen is how effectively Congress can enact budget cuts and agree on tax increases in order to meet the deficit reduction goals that have been set.

"The United States must get its spending in line with revenues," comments Nigel Gault, an economist with Data Resources, Inc. in Lexington, Mass. "If that happens quickly, then we think the U.S. can get by with weak growth in 1988 and no recession."

### Modest growth in '88

Many economists agree. A recent issue of the "Blue Chip Economic Indicators" newsletter reports that the consensus among 49 economists nationwide is that the Gross National Product will grow by 1.9% in 1988.

That figure is almost a full percentage point lower than projections that had been reported before Black Monday and six-tenths of a point lower than estimated growth for 1987.

The majority of economists surveyed say the economy is heading for a recession that most likely will start in 1989. Only one in five says he sees a recession starting in 1988, the report states.

Bob Eggert, publisher of the newsletter, says that despite the projections for only modest growth next year, there are some positive signs.

"Interest rates have come down, and there's been some moderation of inflation," Eggert says. "With the stock market situation, people are moving cash to their savings accounts."

The recent decline in the value of the dollar is viewed as a mixed

*Continued on page 8*

# MIS is slow to brake on spending

MIS executives planning capital expenditures and staffing requirements are, for the most part, taking a wait-and-see attitude regarding the unfavorable economic outlook.

Many MIS executives insist they have not yet finalized budgets, and those who have emphasize that money allocated will not necessarily be spent at planned levels. Few firms seem inclined toward knee-jerk belt-tightening lest they lose momentum on automation projects critical for long-term competitiveness.

"Those companies that feel the pinch will most likely try to squeeze as much out of their people as their hardware," notes Steve Jocelyn, an analyst with International Data Corp.

**Software before staff**

Michael Webber, senior vice-president at The Diebold Group, Inc., a New York-based research firm, says personnel is the first area companies usually reduce. They then scrutinize telecommunications and computer hardware procurements, he adds. Software has become almost sacred, he suggests, and will be touched only if absolutely necessary.

According to economist Nigel Gault and an economic forecast revised after the crash by Data Resources, Inc., capital spending for information technology is expected to increase by 9.7% in 1988. "We revised our figures downward slightly," Gault says.

Larry Stouder, information center manager at Continental Grain Co. in New York, says his firm has not eliminated any capital expenditures. "We're going ahead and purchasing PCs and LANs," he says. "I haven't been told not to."

**Some are cutting back**

Yet, other companies seem unwilling to commit to increased capital expenditures until confidence in the economy is restored. John Koski, an assistant vice-president at Johnson & Higgins, a New York-based insurance brokerage, says his firm will significantly slash its purchases of microcomputers in 1988 in response to soft business prospects.

"We're looking at a 20% to 25% reduction," he notes, adding that final budget decisions have not yet been made.

Executive recruitment companies report a slowdown in activity. Some financial services companies have put a freeze on new hires and are not as apt to fill vacant positions as they were before the stock market slide.

"There's been a significant decrease in recruitment activity," says Hermina Grunfield of the Alwood Group, Inc. in New York. "But most MIS people are still high in demand, as opposed to traditional groups."

Hiring for critical microcomputer-related projects seems to be less affected by budget cuts than is hiring for mainframe-oriented jobs. "There's not as much demand for Cobol mainframe programmers as for people with Unix, C or DOS backgrounds," Grunfield says. "That will be true with or without a recession."

Bob Noddin, president of Metamicro Computer Consulting, Inc., says his firm has not yet received word that companies are pruning budgets for consulting and training services. "Some people are increasing their use of consultants because it eliminates paying fringe benefits while keeping key projects going."

ALAN ALPER

# Preview

CONTINUED FROM PAGE 6

blessing, economists say. While the dollar's plummet reflects weakness in the U.S. economy, it could work to lessen the trade deficit by making U.S. goods more competitive overseas and foreign products more expensive here.

**Aftermath**

A softer economy in 1988 will no doubt hurt most industries to varying degrees. At press time, economists and analysts were waiting for data on the impact of the stock market collapse before revising their economic outlooks for 1988.

**Congress is looking carefully at programs where management is screwing up as areas to cut. Cuts will be made . . .**

BOB DORNAN
Federal Sources, Inc.

The following, therefore, is a series of thumbnail sketches of economic expectations and MIS spending projections for various sectors of the economy throughout 1988.

**Financial services.** The financial services industry will be the first sector of the economy to be affected by the instability and volatility of the world's stock markets.

Many of Wall Street's brokerage firms, in particular, are expecting their five-year span of uninterrupted growth to come to a screeching halt in 1988. Lower earnings or outright losses as well as layoffs could well resound throughout the financial community this year.

"Financial services companies are bound to cut back on spending," Data Resources' Gault notes. "The extent to which they are spending for computers is something that will be looked at, too."

Ken Goldstein, an economist with the Conference Board in New York, agrees, noting that many Wall Street firms have already investigated ways to cut expenses.

"Somebody told me a story about a guy who lost his job the Tuesday after Black Monday and who was asked to come in the next weekend to help the company catch up with its paperwork," Goldstein recalls. "The cutbacks have begun."

For banks, insurance companies and thrift institutions, the economic outlook is extremely dependent on the ebb and flow of interest rates, economists say. Although tough to call, the prognosis is that, barring unforeseen circumstances, interest rates will most likely remain low throughout 1988.

Financial services businesses, which have become major users of information processing technology, will most likely continue purchases when competitive advantage is at stake and could boost investments in making existing systems more efficient. Less critical projects will most likely be deferred to a later time.

"The industry, after years of unbridled growth, will attempt to do more with less," one Wall Street MIS executive says.

**Manufacturing.** The decline of the value of the dollar will most likely benefit manufacturing firms that export their goods overseas. Computer and chip manufacturers, durable goods makers and appliance manufacturers may be able to recapture lost domestic market share, since Japanese-made products have increased in price.

"I've seen a cautious approach to business prospects in 1988 for manufacturers," notes Paul Clermont, a principal with consulting firm Nolan, Norton & Co. in Lexington, Mass. "Many expect modest growth but are not making optional expenditures. Some people have gotten smarter over the past years and are spending what they need to remain competitive."

Eric Knutsen

The Conference Board's Goldstein agrees, noting that the stock market's impact on capital spending could wane during the next few months if deficit reduction plans are put into place and consumer spending accelerates.

"Clearly, things that are not needed immediately, like office automation equipment, could be cut out," he says. "Things needed to remain competitive, such as factory automation gear, are less likely to be as severely impacted."

**Government.** Although limited by federal budget cutting, the government's procurement of information processing technology is expected to grow because of a number of ongoing modernization programs. The government is expected to spend $13.4 billion on new information technology in 1988, plus $4 billion on personnel to program, maintain and operate the new equipment, according to Bob Dornan, an analyst with Federal Sources, Inc. in Washington, D.C.

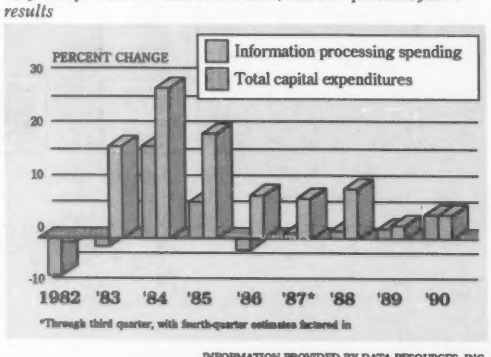
"Much of the spending already takes into account tighter budgets," Dornan says.

Even though budget cutting may hurt some departments, critical efficiency programs — like ongoing automation of the Social Security Administration — will unlikely be affected.

"Congress is looking carefully at programs where management is screwing up as areas to cut," Dornan suggests. "Cuts will be made even if the programs are cost-justified."

## Total capital expenditures vs. information processing spending

*Projected percent increase or decrease, based on previous year's results*




*Through third quarter, with fourth-quarter estimates factored in

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CW CHART

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# And the survey says . . .


When the stock market crashed, firms throughout the world moaned collectively as their Wall Street-traded stock took a stupendous free-fall. In the crash's wake, economists frantically revised U.S economic forecasts, and businesses instinctively tightened their belts.

But how will such an event affect MIS hiring and spending? *Computerworld* asked 100 MIS executives in four strategic markets what economic scene they forecast for 1988, whether they expect a slowdown in the economy and what a lagging economy might mean for capital expenditures like mainframe computers.

Below are the questions and results.

**Do you expect 1988's national economy to be slower or more robust than 1987's economy?**
Slower: **59%** More robust: **23%** No change: **18%**

**Do you anticipate a recession in 1988?**
No: **76%** Yes: **22%** Don't know: **2%**

**In the event of a recession, how, in your opinion, will MIS be affected?**
A. Staff cutbacks. No: **77%** Yes: **22%** Not sure: **1%**
B. Budget reductions. No: **50%** Yes: **49%** Not sure: **1%**
C. Hardware acquisition reductions. No: **60%** Yes: **39%** Not sure: **1%**
D. Special project cutbacks. No: **52%** Yes: **47%** Not sure: **1%**

**Do you expect your MIS purchasing and acquisition plans for 1988 to be affected by recent stock market fluctuations?**
No: **74%** Yes: **20%** Don't know: **6%**

**Are you planning, at this time, to increase or decrease your MIS budget as a whole in 1988?**
Increase: **54%?** Decrease: **14%** Neither: **31%** Not sure: **1%**

**By what percent?**
Average increase *(52 respondents)*: **14%**
Average decrease *(4 respondents)*: **17%**

**Are you currently planning to increase or decrease your MIS staff in 1988?**
Increase: **34%** Decrease: **5%** Neither: **59%** Not sure: **2%**

**By what percent?**
Average increase *(31 respondents)*: **20%**
Average decrease *(4 respondents)*: **15%**

**Are you currently planning to increase or decrease your software development efforts in 1988?**
Increase: **55%** Decrease: **6%** Neither: **34%** Not sure: **1%** Not applicable: **4%**

**By what percent?**
Average increase *(49 respondents)*: **21.3%**
Average decrease *(4 respondents)*: **8.8%**

**Do you expect to increase or decrease your large-system (mainframe hardware) expenditures in 1988?**
Increase: **33%** Decrease: **8%** Neither: **46%** Not applicable: **13%**

**By what percent?**
Average increase *(30 respondents)*: **27.5%**
Average decrease *(4 respondents)*: **18%**

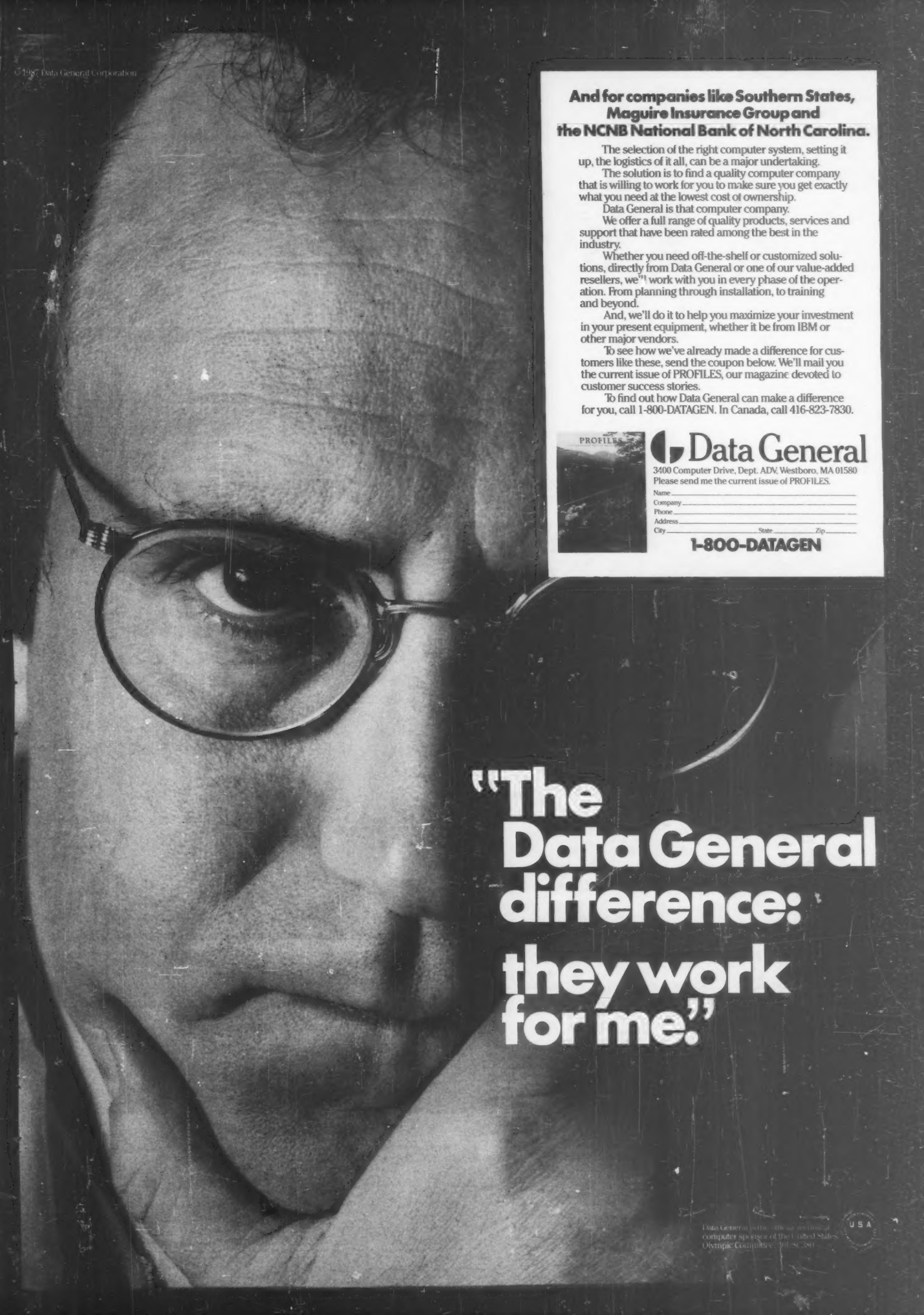
**Do you expect to increase or decrease your mid-range system expenditures in 1988?**
Increase: **30%** Decrease: **4%** Neither: **56%** Not sure: **2%** Not applicable: **8%**

**By what percent?**
Average increase *(27 respondents)*: **36.3%**
Average decrease *(2 respondents)*: **2%**

**Do you expect to increase or decrease your microcomputer and workstation hardware in 1988?**
Increase: **45%** Decrease: **6%** Neither: **40%** Not sure: **2%** Not applicable: **7%**

**By what percent?**
Average increase *(41 respondents)*: **22.3%**
Average decrease *(4 respondents)*: **15%**

**Will MIS expenditure increases or decreases exceed those of the corporation as a whole?**
No: **62%** Yes: **25%** Not sure: **13%**



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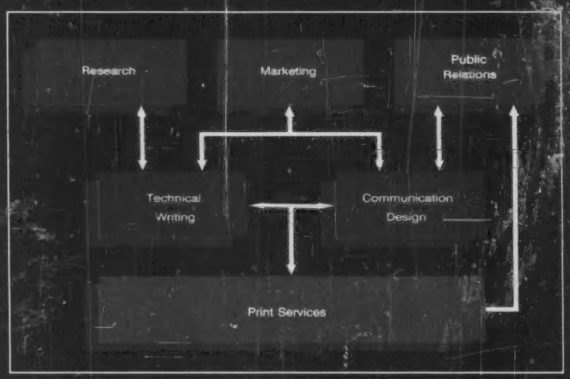



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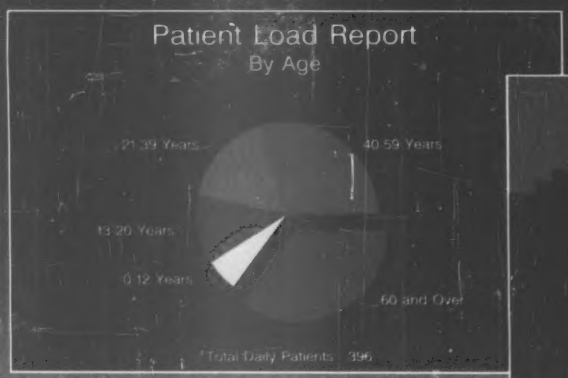


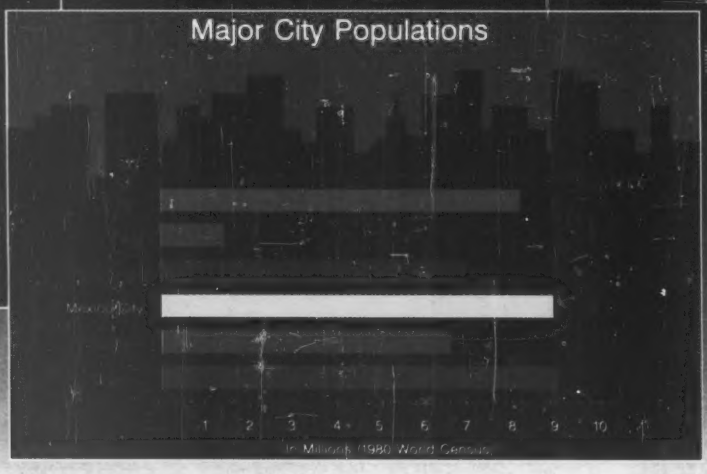


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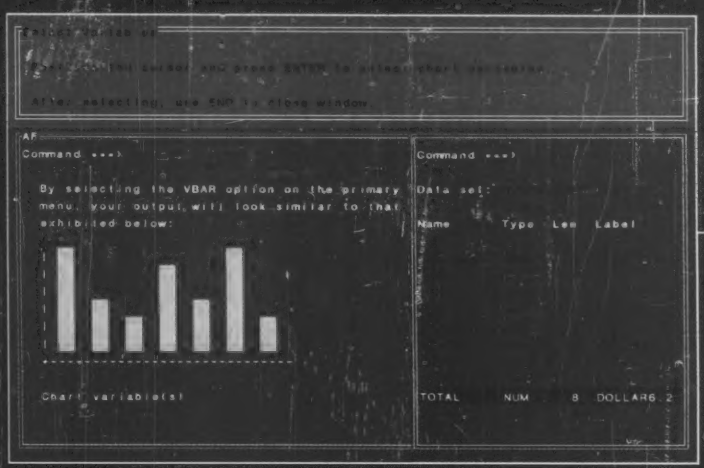


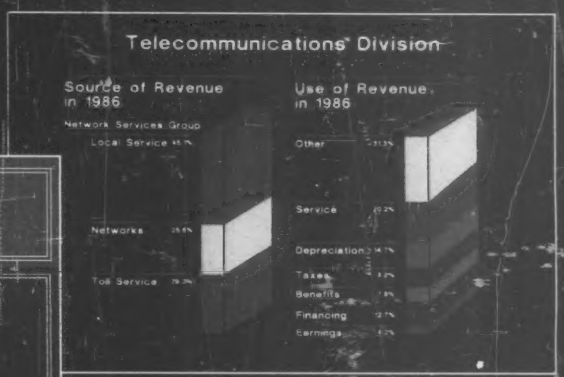


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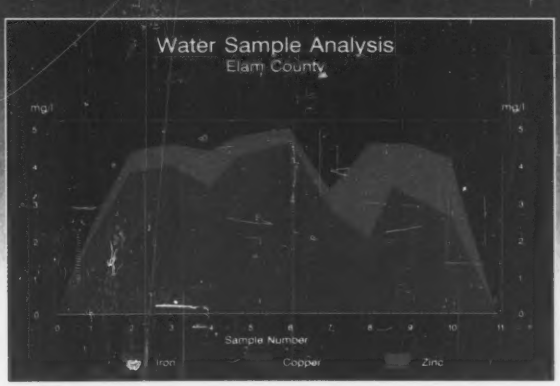


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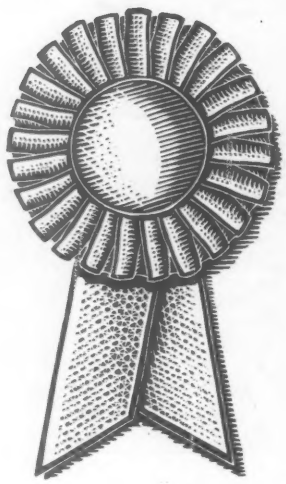


# Dubious distinctions

## Computerworld *bestows odious honors upon a hapless few*

Let's face it, 1987 wasn't always a year to write home to Mom about.

From the Iran-Contra hearings to the stock market convulsions, '87 kept us glued to our newspapers long after we should have been bent over our keyboards working. And the computer industry, try as it might, was not immune to 1987's problems. The past year was one marked by snafus — announced products that never showed up, touted trends that faded into the woodwork and hot companies that seemingly fell off the face of the earth.

*Computerworld* has compiled the following list of these odious honors — our version of the Flying Fickle Finger of Fate Awards — to pay a final tribute to those who shocked and bemused us during the past year. And the awards go to . . .

.....

**Lt. Col. Oliver North: You can shred, but you can't hide**

North and his secretary, Fawn Hall, try to shred and alter printouts of computer messages as part of a cover-up of the Iran-Contra scandal. But they forget that originals are stored in a central computer archive. Despite the shredding, an implementation of IBM's electronic mail product, Professional Office System, at the National Security Council provides the Tower Commission with a first-hand, contemporaneous account of the events surrounding the affair.


RICH TENNANT

**Better luck next time**

In October, 11 months after a high-profile Comdex/Fall '86 announcement of its Silk — a contender against Lotus Development Corp.'s 1-2-3 — Daybreak Technologies, Inc. files for bankruptcy under Chapter 11 protection.

.....

**Too much too late**

Thanks to the plunge in takeover stocks when Ivan Boesky pleads guilty to insider trading, Comdisco, Inc. reports a loss of $20 million not long after its confident diversification into the risk arbitrage business. When the stock market crashes, the same unit loses $100 million on paper. In November, Comdisco's board votes to exit the risk arbitrage business.

.....

**Once is not enough**

A top marketeer at Relational Technology, Inc., after extolling the merits of the firm's Ingres relational data base management system over competitor Oracle, Peter Tierney resigns to take the top marketing job at Oracle Corp., where he will extol the merits of its Oracle relational DBMS against . . . you guessed it.

Edward Zander makes a similar move from an upper-level marketing post at Apollo Computer, Inc. to a comparable position at archrival Sun Microsystems, Inc.

.....

**Is anybody there?**

Seemingly dropping off the face of the earth, Canaan Computer Corp. goes out of business, not bothering to tell many customers or OEMs.

**Vapor where?**
At one point in 1987, Lotus Development Corp. has 11 products on the "vapor list."

.....

**Creative language class**
In November, IBM announces that it has shipped one million Personal System/2s. In fact, IBM's definition of "shipped" is that products have moved from the factory to the warehouse. At this point, there's no way to tell how many have actually been sold.

.....

**Always a bridesmaid**
After three unsuccessful attempts to merge with other companies, 3Com Corp. finally succeeds on the fourth attempt, tying the knot with Bridge Communications, Inc.

.....

**Good idea, bad execution**
Lotus's Signal stock quote system, designed to handle market declines of up to 99 points, cannot track the Dow Jones industrial average's 508-point nosedive on Black Monday.

.....

**Let's make a deal**
Since exiting the Winchester disk drive business in 1986, Computer Memories, Inc. looks for a way to deploy $24.8 million in cash and cash equivalents. Even an agreement to merge with Hemdale Film Corp., a motion picture distributor, is canceled.

.....

**Him with foot in mouth**
In the face of popular and growing support for Manufacturing Automation Protocol (MAP), Digital Equipment Corp.'s Ken Olsen asks, "Why do we need another network?" He implies that DEC's proprietary Decnet is ready and waiting for factory networking applications. According to a source who attends his speech, Olsen says a standardized networking scheme would be like a Russian truck — functional but boring; nobody would want it. In the meantime, DEC is hard at work supporting MAP with compatible products.

.....

**He did it his way**
Promoting his autobiography, John Sculley, chief executive officer of Apple Computer, Inc., is all over the media. His face appears just about everywhere but the cover of *Field & Stream*. And he apparently decides promotion is as good a reason as any to embarrass himself and Steve Jobs by telling how Jobs cried at the board of director's meeting at which he was ousted from Apple.

.....

**Oops**
For the first time ever in IBM history, Chief Executive Officer John Akers leads the industry giant to its second straight year registering a drop in profits.

.....

**Those were the days**
At one time the biggest computer conference in the world, the National Computer Conference is mismanaged so badly by the American Federation of Information Processing Societies and NCC organizers that it turns into an also-ran, abandoned show that time passed by.

.....

**Oh. . . . Never mind**
On Jan. 20, 1987, Enmasse Computer Corp. issues a press release announcing a new product line. Enmasse subsequently issues a release dated Jan. 19, 1987, saying the company is ceasing its manufacturing and sales operations.

.....

**Better never than late?**
Infoloans, a hot integrated loans package for banks, was scheduled for a March release, but the product's developer, Uccel Corp. (now Computer Associates, International, Inc.), drops hints that it will be off schedule. Finally, in May, the company says it will announce a new shipment date by June. In June, Uccel does so. The release will be at year-end 1988 — almost two years behind schedule.


.....

**The best-laid plans**
Former National Security Advisor John Poindexter signs a computer security memo that creates such a storm of controversy that Frank Carlucci, his replacement, has to rescind it. The memo requires U.S. agencies to search data bases for unclassified information too sensitive to be disclosed and raises the specter of government censorship.

.....

**Can't win for losing**
Facing the ultimate double whammy in U.S trade sanctions, Toshiba Corp. is nailed. First, Toshiba laptops are slapped with 100% punitive tariffs in connection with the U.S.-Japan semiconductor trade dispute. Then, Congress considers a total ban on Toshiba imports after a subsidiary is found to have been selling advanced technology to the Soviet Union. Some irate members of Congress take to "Toshiba-bashing" literally, standing outside the Capitol with sledgehammers and slamming away at Toshiba radios.

.....

**What, me worry?**
The only organization to oppose the continuation of the widely used Data Encryption Standard (DES) for safeguarding computer and communications data, the National Security Agency worries that a major code-breaking effort by the Soviet Union's KGB could ruin the standard. But the rest of the computer world says DES is just fine.

.....

**Just following orders**
In the aftermath of the stock market crash Oct. 19, the practice of computer-aided program trading takes the heat. Members of Congress suggest that use of the software drove the velocity of the already rapidly declining market. Others point out that computers do only what people program them to do and that program trading cannot be used as a scapegoat for the market's demise.


## TRENDSETTERS

Dennis Klinger's "things to do" list for the next few months includes switching his company from its Motorola, Inc. minicomputers to IBM System/36s and 38s and rearchitecting about 75% of the total system portfolio.

The vice-president of MIS at Ryder Truck Rental, Inc. in Miami says the switch-over is an activity that involves one million lines of code. "We didn't just convert but totally rearchitected the systems portfolio to handle the changes in the businesses," Klinger says.

If that burden were not heavy enough, Klinger also looks after a slew of computers, from an IBM 3080 and an Amdahl Corp. 5860 to the minis and hundreds of personal computers, mostly from IBM. He says he has other projects in the works as well.

**True systems**

"We are moving as aggressively as we can toward end-user computing, and we've been a big subscriber of the information center concept. We're also moving to an implementation of the true executive information system," he says.

The corporation's philosophy is to leverage its resources, assets, people and facilities, Klinger explains, saying that he and his staff are working to integrate the systems to parallel that corporate objective.

To meet those goals, Klinger constantly puts his staff to the test, sending them into the field to see what the users do and bringing in users to see what MIS is all about.

**Client objectives**

"I believe that MIS people in our organization need to understand the business and be a value-added contributor," Klinger maintains. "I try to make each MIS person understand the objectives of our clients — the users. To do that, they need to understand the needs of our company's customers, and then they make any suggestions on how MIS can help."

Klinger says that while he does not consider his shop to be on the "bleeding edge" of technology, his philosophy is to implement what is practical. "We have to know what the bleeding edge is and try to forecast that," he says. "But we will only implement it when it is practical for our company.

"It's like steering a barge in a river," he adds. "You may go slow, but you need to know when to turn long before the guys driving the speedboats do. You need to plan ahead."

ALAN J. RYAN

**We are moving as aggressively as we can toward end-user computing, and we've been a big subscriber of the information center concept.**

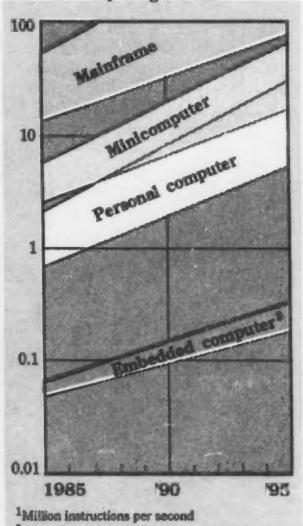
DENNIS KLINGER
Ryder Truck Rental, Inc.



## Forecaster

### How much power?

*A prediction of MIPS[1] ratings for computing devices*




[1]Million instructions per second
[2]An embedded computer resides in the device it controls

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CW CHART

# Workhorse operating systems square off

## *Vendors look to fix system shortcomings*

BY CHARLES BABCOCK

When the power goes out at an IBM MVS/XA installation, system operators scramble to go through shutdown and start-up procedures.

When the power is lost at a Digital Equipment Corp. VAX site, VMS reboots and reconfigures itself.

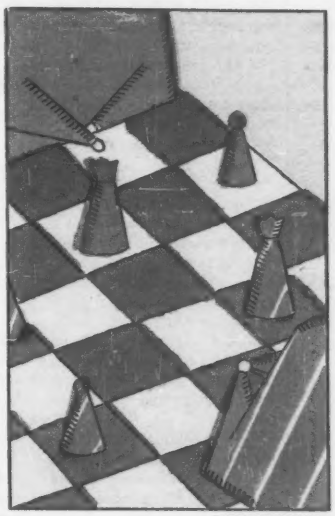
Tasks presented to MVS/XA are dependent on CLIST commands or IBM's intricate, hard-to-learn JCL, which tells the operating system exactly what resources are needed for the job. Tasks presented to VMS can frequently take the form of statements such as Copy, for copying files, or Purge, for getting rid of files. If a user forgets the commands, VMS supplies a Help screen.

"When you expose IBM system operators to the DEC world, they can't believe how easy it is to operate," says Michael J. Schowalter, a veteran of the IBM mainframe world who is now director of DEC programs at Software AG of North America, Inc. in Reston, Va.

But any operating system represents a set of trade-offs, and no operating system does everything well. VMS's ease-of-use attributes do nothing to improve its lackluster performance on some workhorse tasks where MVS/XA shines. As IBM and DEC enter another year of their broadening rivalry, both will attempt to address the weak points of their production operating systems.

Customers will look at the price/performance ratio of millions of instructions per second (MIPS) available in a DEC Vaxcluster vs. those on a mainframe and wonder which one offers the better investment. With DEC claiming it can offer cheaper MIPS, attention will probably turn to the respective merits of each company's operating system. In particular, customers will want to assess system overhead, ease of use and transaction processing capabilities.

Does this mean DEC will continue to push relentlessly upward toward IBM's control of the data processing center? Not exactly. Whatever ground IBM has to concede on the first two issues — that VMS has less overhead and is easier to use — it will not yield at all on the third: transaction processing.



PHILIPPE WEISBECKER

On a high-volume, I/O basis, VMS and the Vaxcluster are plodding beasts of burden compared with the sleek thoroughbred of MVS/XA on an IBM 3090 mainframe. VMS is capable of 10 to 15 transaction/sec. compared with 200 transaction/sec. under MVS/XA for standard IMS transactions or 1,000 transaction/sec. with IMS Fast Path. But processing power, like beauty, can reside in the eye of the beholder.

"VMS enables you to distribute data and processing power across machines with a minimum number of operating personnel. But if your application requires the movement of tremendous quantities of data quickly, MVS/XA justifies its overhead in systems and operations personnel," says W. W. D. Dowdell, director of research and development at McCormack & Dodge Corp. in Natick, Mass., who is familiar with both the mainframe and minicomputer worlds.

Direct comparison of VMS and MVS/XA is nearly impossible, given that they represent the yin and yang of system software; they have, for all practical purposes, come out of two different worlds. But a sense of how they evolved, along with recent comments from their respective chief developers, offers a look at what direction the two are headed in.

MVS/XA grew out of the batch processing world of IBM's early 370 operating systems: OS/VSI, DOS/VS and DOS/VSE. When needs changed and users demanded more on-line, interactive capabilities, IBM began adding subsystems to MVS the way the first car builders added mechanical devices to carriages.

"The fact that there has to be a transaction processing monitor shows MVS comes out of the batch processing world," says Stuart Miller, president of Software AG

and previously an operating system designer for the former Sperry Corp. In addition to TSO or CICS, MVS is also sold with what amounts to a job-entry subsystem, JES2 or JES3, Data Facility Product for disk management and 12 or so other components for communications and other functions, giving the operating system a total of eight to 10 million lines of code.

Roger J. Heinen Jr.

"As measured by the number of moving parts, the System/370 operating system is undoubtedly mankind's most complex single creation," says Gary D. Brown in his widely read text, *System/370 Job Control Language*.

"If I were a data center manager, I would prefer MVS/XA, because it's much better at processing transactions, much tighter and easier to control" from end-user intrusion, says Gerald P. Thompson, superintendent of computer projects at the U.S. Department of Energy's Savannah River Plant in Aiken, S.C. The uranium-processing site has three IBM mainframes interconnected with dozens of VAXs.

VMS, occupying about 500K bytes of VAX main memory, has a more compact, well-tailored look. Many of the functions added onto MVS were built into VMS, Miller says. These include peer-to-peer communications, job scheduling, system configuration and self-restart capability.

Thompson says he prefers VMS for a distributed environment in which the end user will take greater responsibility for his own computing. VMS "is easier to work with for developing applications," he says.

### Science roots

DEC's roots place it close to the scientists and engineers who were using small computers in time-sharing environments. To this day, a VAX captures and processes each keystroke from a terminal as it is made, unless a server is installed to route them forward in blocks.

Roger J. Heinen Jr., one of the key developers of VMS at DEC's Nashua, N.H., site, says the DEC operating system includes a number of subtleties that are not widely recognized. Its paging algorithm, for example, does not rely on the common, least recently used measure for determining which pages of data go to disk.

VMS randomly moves pages from main memory into cache, where they can be called back quickly if needed. It then periodically sweeps the cache contents out to disk. The random-caching scheme is more effective, Heinen claims, because data used once is more likely to be needed again than least recently used statistics tend to indicate.

To compete with IBM, however, VMS will have to evolve into more of a transaction processor and a more intelligent manager of a Vaxcluster, DEC observers say.

"The first question I have for a DEC customer is how many terminals are you going to use? That could be the Achilles' heel of the system," Schowalter says.

Processing terminal transactions bogs down a VAX, although Heinen says VMS is a better transaction processor than is generally recognized. Most VAX application writers are trained to take advantage of its time-sharing capabilities. On a VAX, a transaction has to be assigned a higher priority than other time-shared tasks or it will be interrupted, Heinen explains.

"The traditional way of designing systems for VMS have not taken advantage of its transaction processing capability," Dowdell agrees.

### VMS Version 5.0

In Version 5.0 of VMS, expected to be out in the second quarter of 1988, DEC is believed to be planning to introduce symmetrical multiprocessing, which will allow VMS to manage dual or quad processors as equals rather than one acting as master and the other as an underutilized slave. A quad-processor machine [CW, Nov. 2], in particular, would allow DEC to improve its transaction processing rates, although other constraints might surface.

The main source of bottlenecks, on top of instruction throughput, is managing I/Os, which depend on disk speed, channel speed, the Vaxcluster's record-locking mechanism and a dozen other factors. In order to exploit the maximum potential of a CPU, they must be resolved at each spot for smooth throughput.

Heinen claims the DEC development team is aware "each bottleneck has to be relieved in sequence. Every one we've identified, we can fix."

Lock management can be a bottleneck on a cluster, since multiple CPUs are trying to access the same files in a data base and are hammering away at a lock manager that sits between the CPUs and the disks. Heinen says he is not able to comment on how its performance might be improved in future versions of VMS.

What is needed, suggest Software AG officials, is a virtual lock manager or a software mechanism like a data base manager that handles file contention inside the CPU. This would reduce I/Os and greatly speed access to records and transaction processing.

In that situation, each CPU would have to be associated with particular volumes of direct-access storage devices that it managed for the cluster. That way, an application could remain independent of any particular CPU in the cluster, and data could remain available to any application.

Schowalter says he thinks DEC will have to adopt some such approach if it brings out a multiprocessor CPU that some customers may wish to devote to high-transaction applications.

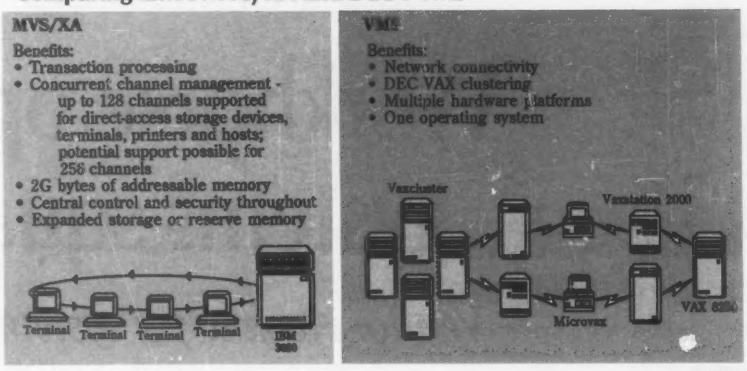
In addition, the DOE's Thompson recommends that DEC add more functions to VMS that can be managed remotely, so that users can be added to a remote system or backups can be made without a human operator.

With MVS/XA, IBM continues to attack the constraints on I/Os and instruction throughput on a number of fronts. Its ability to do so capitalizes on the mainframe's strengths: offloading routine tasks, such as channel selection, to auxiliary processors; and making use of huge amounts of real memory, both in the form of main CPU memory and an innovation with the 3090 known as expanded storage.

Expanded storage is reserve memory in boards of silicon chips controlled by the paging supervisor of the operating system but not addressable by programmers. Through expanded storage, IBM has temporarily reversed the lead virtual memory usually enjoys over real memory. It has included in the 3090s a potential capacity for 16 terabytes of expanded storage, vs. the current 2G-byte virtual memory limit.

The existing 1G byte of expanded storage in the 3090Es

## Comparing IBM's MVS/XA and DEC's VMS




CW CHART

**As measured by the number of moving parts, the System/370 operating system is undoubtedly mankind's most complex single creation.**

GARY D. BROWN
Author, *System/370 Job Control Language*

has the effect of allowing freer use of MVS/XA's virtual memory without concern for whether it would engender I/Os.

One immediate effect was to allow huge buffers for IBM's DB2, playing up another IBM strength, managing large amounts of data. As DB2 data base designers learn to tap the large buffers, they will be able to load large tables into the CPU, speeding the performance of a relational data base, according to IBM observers.

In MVS/XA's most recent release, Release 2.2, IBM added a feature called Data In Virtual. It allows a data set in virtual storage defined by an application to be loaded into expanded storage inside the CPU. Normally, the application keeps data in a combination of CPU memory and auxiliary storage, such as disk drives.

"When you have data in virtual storage, you want it as close to the processor as possible. You don't want to do all those I/Os. That's where expanded storage comes in," says Richard Butler, the head of IBM's MVS/XA development lab near Poughkeepsie, N.Y.

**MVS/XA is very weak communicating with other systems — even IBM systems.**

GERALD P. THOMPSON
U.S. Department of Energy, Savannah River Plant

Once Data in Virtual became available, the application programmer would be able to put his data in virtual storage instead of worrying about moving it back and forth between CPU memory and "brown and round," as Butler calls disk drives.

Keeping data in virtual memory reduces complexity, Butler notes, and MVS/XA will be developed for additional productivity boosts in this realm, he says.

Although expanded storage is a hardware device, its management by MVS/XA is an example of how hardware and software development must proceed in tandem under the management of the operating system. The challenge, according to Butler, is to allow the operating system "to keep your resources in balance."

**Upgrade with 3090F**

IBM is expected to introduce an upgraded version of MVS/XA when it announces the 3090F series of processors in early 1988. William S. Husband, senior consultant for the Meridien Group in Deerfield, Ill., predicts that IBM will have increased the address word size from 31 to 38 bits and calls the operating system MVS/XB when it reaches that point.

Butler says there is "no such term as MVS/XB" and refuses to speculate on when the word size will be increased again. MVS/XA split away from MVS/SP when IBM announced an increase in the word size from 24 to 31 bits in 1981.

Although IBM officials concede that MVS/XA is a complex system, they say that their development efforts are driving toward incorporating more subsystem functions, such as VTAM file management, into the core operating system and toward reducing complexity in other areas.

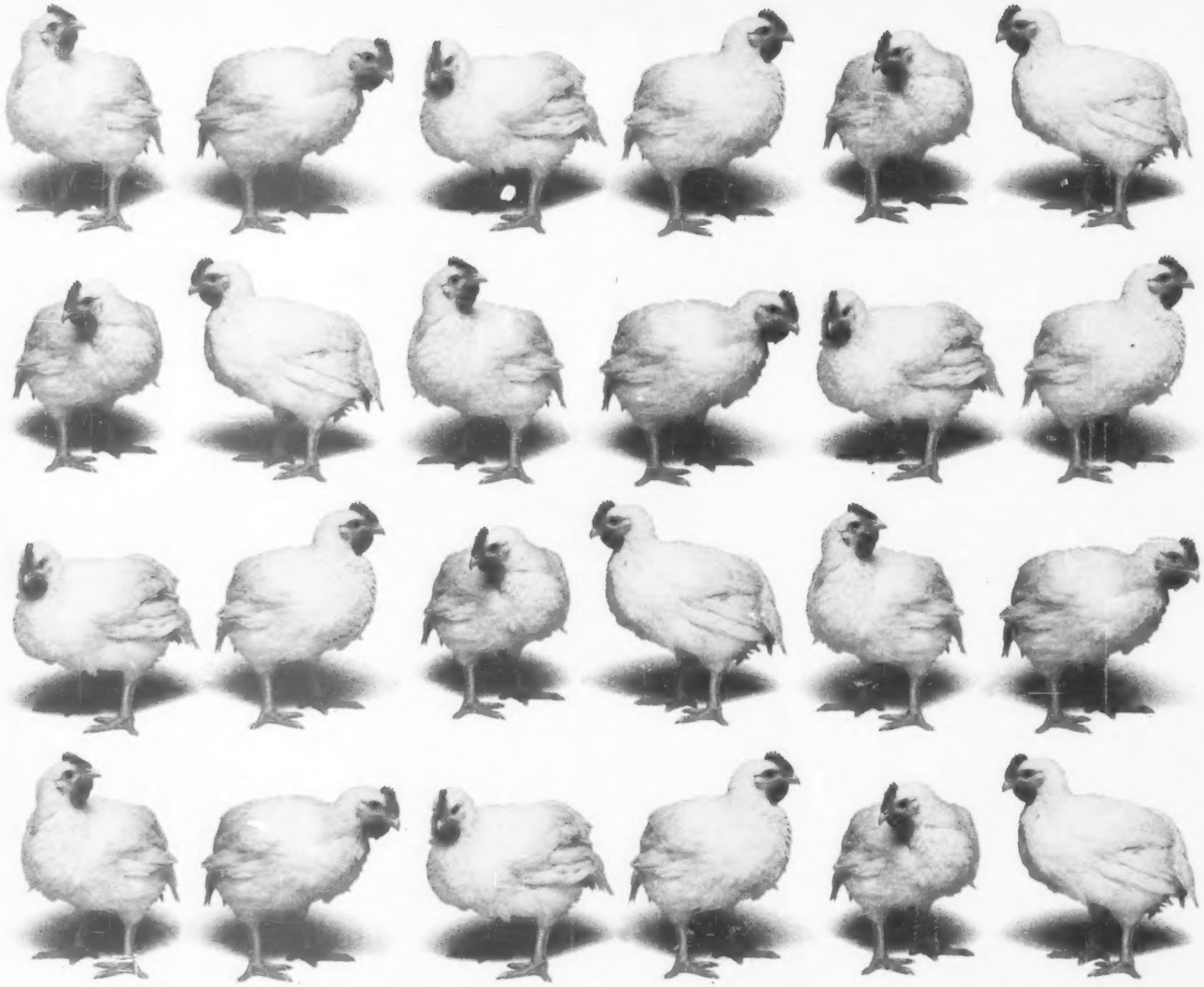
IBM views requiring skilled operators as a constraint on MVS/XA operation and will seek to automate more human functions in the operating system and in related products, such as Netview, Butler says.

Thompson says he wishes IBM would improve MVS/XA's ability to interconnect with other systems, since he is responsible for linking the mainframes to an extensive Decnet network. "MVS/XA is very weak communicating with other systems — even IBM systems," he says.

**Richard Butler of IBM's MVS/XA development lab**

Husband says he believes IBM is working on increasing the number of CPUs that can be managed by MVS/XA and thinks expanded storage and its extensions will allow remote CPUs to be tightly coupled via high-speed fiber-optic buses.

Increasing the number of addressable CPUs may one day allow MVS/XA to address 370 architecture workstations and tightly integrate them with mainframe resources, he says.



# CINCOM Boosts Prod

*Mr. Bill Clontz*
*Director of Computer Services*
*Holly Farms Foods*

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*Improving programmer productivity in order to reduce a large applications backlog*

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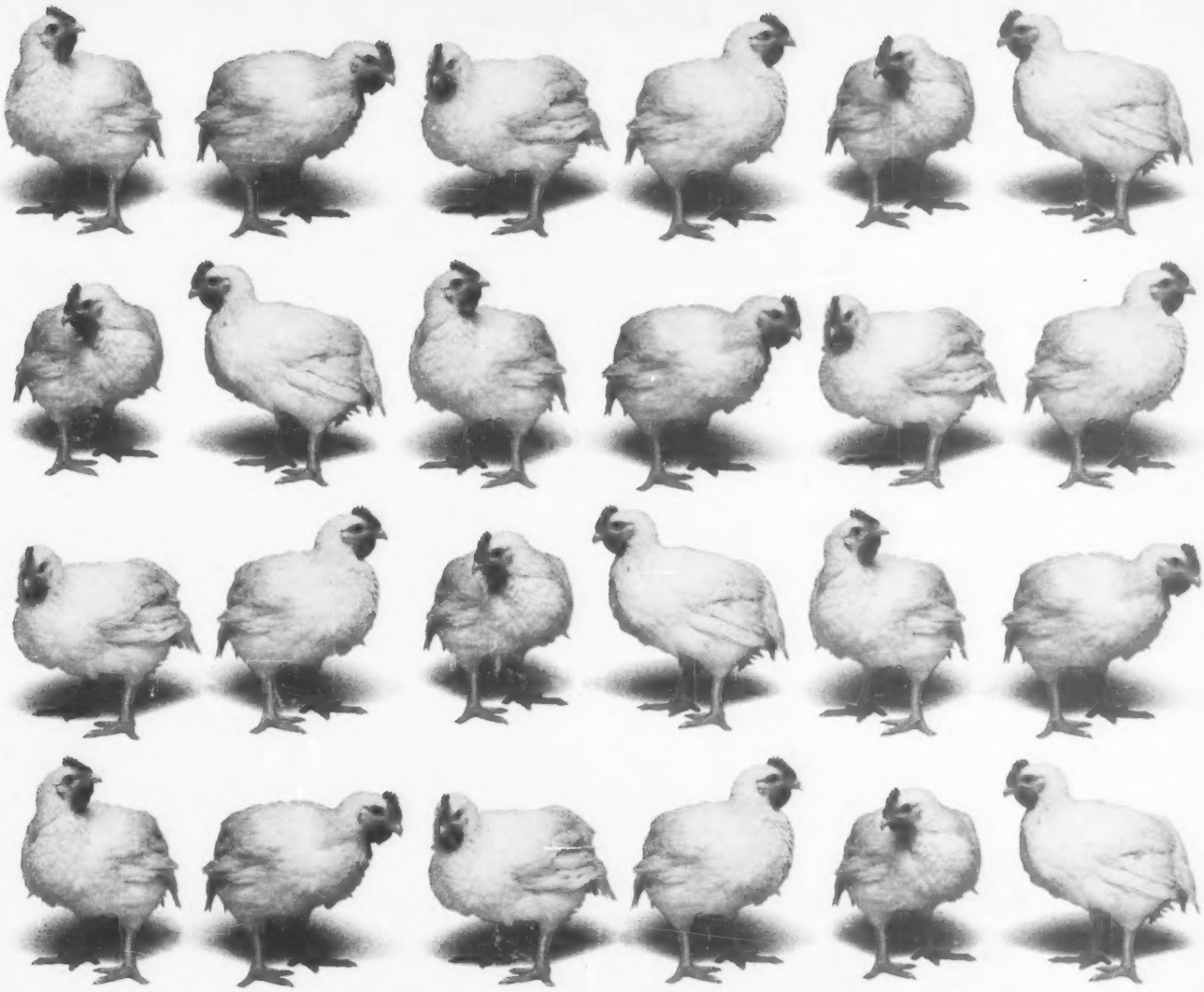

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# A good view from both sides of the fence

In looking for informed comment on IBM's MVS/XA and Digital Equipment Corp.'s VMS, *Computerworld* turned to two pivotal spokesmen who have wide experience in both the IBM mainframe world amd the DEC VAX environment.

W. W. D. Dowdell, formerly a principal with Software International Corp. in Andover, Mass., was the developer of the Masterpiece integrated accounting package for that company. Masterpiece was designed for IBM mainframes but has since been ported onto the VAX. In mid-1987, Dowdell moved to the Natick, Mass., accounting applications vendor McCormack & Dodge Corp., where he currently serves as director of research and development.

Michael J. Schowalter sold more than $1 million worth of Software AG of North America, Inc.'s DEC product line — in one year — before becoming the firm's DEC programs director. Prior to that, he was a programmer for the Chubb & Sons insurance group, working with IBM mainframes. Schowalter also served as MIS director for a number of companies.

Spokesmen for both M&D and Software AG say many of the companies' IBM mainframe customers are also users of VAX minicomputers, necessitating expertise in both vendors' environments.

Schowalter suggests that DEC might improve its poor transaction processing performance on the VAX line by devoting a high-performance Vaxcluster CPU to handling transactions. To process queries and updates, the CPU would use its own internal lock manager in virtual memory instead of using the cluster's external, I/O-dependent lock manager. The CPU would be restricted to using volumes of direct-access storage devices dedicated to it, rather than to the cluster. Applications on other CPUs, however, would still have access.

Roger Heinen Jr., a leading member of DEC's VMS development team, says that what Schowalter describes is a partitioned data base. "The notion that locks are a bottleneck [to transaction processing] is not strictly true," he says. Nevertheless, "it's a real good suggestion and one, among several, that we are looking at."

Schowalter says that if DEC wanted to market a machine with more mainframe-like capabilities, it would give the system a high millions of instructions per second (MIPS) rate. He says the multiprocessor "Polar Star" VAX that is now under development will reportedly offer 22 MIPS. With Version 5.0 of VMS, he says, the machine could become DEC's mainframe-like transaction processor.

**W. W. D. Dowdell**

Schowalter and Dowdell point out that IBM's 3090 mainframe and DEC's VAXs can both run large applications because both MVS/XA and VMS offer a 2G-byte virtual memory environment. Both companies report that they are planning to increase the limit, though few customers in either camp have designed applications that are bumping up against the memory barrier.

To date, the 3090's data and I/O management capabilities give it a heavy advantage in running large, data-intensive applications, Dowdell says. "Opening a file is fairly heavy overhead to a minicomputer. It has to work to set up tables and connections and mediate between users. It adds up in a hurry." DEC has helped improve the efficiency of the VAX by making main memory inexpensive to add, Dowdell says.

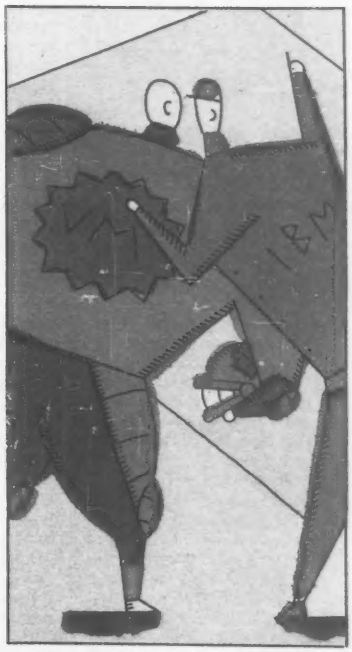
Disk access is still comparatively slow on the VAX in relation to the speed of IBM 3380 disk drives. This is another factor that works in IBM's favor for transaction throughput.

While he acknowledges that VMS is easier to write applications for and easier to use, Dowdell says MVS/XA, with its many subsystems, is easier to fine-tune to specific large tasks.

CHARLES BABCOCK

# IBM's VM gets spit-and-polish treatment

## *Advances leave users confused but happy*




PHILIPPE WEISBECKER

BY ROSEMARY HAMILTON

With a series of announcements in 1987, IBM took a big step and declared VM the end-user operating system for its strategic 370 line of computers — and users are all for it.

The remainder of the decade will be short on such dramatics, but there will be additional steps taken to solidify this role for VM in the IBM mainframe world, company executives said in a recent interview.

The IBM executives would not commit themselves to dates for upcoming VM announcements, but they did detail what will occur during the next few years.

In a nutshell, IBM will be streamlining the operating system by reducing the number of versions and aligning and improving the ones that will remain. In other words, it is time to give VM some polish.

The flurry of VM activity has been applauded by VM shops recently. Users say the move to streamline the operating system signals a stable future, something they were not so sure of a few years ago.

One IBM VM customer expresses concern that there may have been too much VM activity in 1987 for users to digest. "My concern is that there may have been too many announcements with long lead times," says Thomas O'Leary, director of MIS technology at North American Philips Corp. in New York. "We haven't put in [VM/SP] Release 5 yet, and they've already announced Release 6. But I still think the story for users is bullish, and we shouldn't be apprehensive."

Other users agree with O'Leary's conclusion. "The streamlining plus the big push for VM and [IBM's] Systems Application Architecture tell me VM will be a dominating operating system of the future," says Luke Marvin, manager of systems software at Analog Devices, Inc. in Norwood, Mass.

IBM's concern for VM developed as it became clear that end-user computing was becoming increasingly important. Add to that IBM's increased competition with Digital Equipment Corp. — its VAXs run an end user-oriented operating system, VMS — and IBM had a real need for a strong interactive operating system for users running mid-range and mainframe systems.

IBM turned to VM because it was the only 370 operating system that was originally intended for heavy end-user interaction. "It is the best 370 vehicle to provide end-user computing," says Lois Dimpfel, manager of the IBM Kingston Programming Center in Kingston, N.Y.

For the same reason, VM was of little interest to IBM a decade ago, when end-user computing and distributed processing did not have the significance they do today. Users claim IBM tried to kill off the operating system many times, but IBM stops short of saying the operating system was almost "killed." Instead, William Vance, director of VM programming, prefers to describe it this way: "It certainly wasn't being invested in the way it has been since then."

North American Philips' O'Leary, a VM user since 1969, says IBM's current VM activity is motivated primarily because of DEC. "There's a general impression that for years, [VM users] have been the malnourished children, and that now, IBM realizes that and is filling our plate," O'Leary says. "My feeling is this more concerns the war with DEC that they won't admit to, and VM, especially with the 9370s, is their big weapon."

But users also say that whatever IBM's motivation may be, they will reap rewards from it. One user, who asked not to be identified, says that by streamlining the operating system, IBM will be bringing badly needed uniformity to the VM world. Currently, if he moves between the various VM systems, there are varying degrees of problems with applications. He says those problems range from the trivial to simply not being able to run the application at all.

To other users and industry observers, IBM's declaration in 1987 of

VM's importance and its subsequent plans for it are way behind schedule.

"To me, [IBM] is finally catching up with the things that fell through the cracks," says Mark Turpin, a consulting analyst for computer systems integration at the Southern Co. in Atlanta. "Things like device support and Systems Network Architecture support always came last to VM. They are finally making it a strategic product."

**Scaling down to two**

Behind schedule or not, IBM is currently planning to reduce the number of VM versions to two. Eventually, there would be one version, VM/SP, for the 370 hardware, such as the current 9370s, and another, VM/XA SP, for the 370 processors that support the XA architecture, such as the 3090 line.

**In a nutshell, IBM will be streamlining the operating system by reducing the number of versions and aligning and improving the ones that will remain.**

VM/IS would be considered a subset of VM/SP and not a separate version, Vance adds.

IBM's Arthur Olbert

Other than this distinction between the 370 and XA versions, however, VM is intended to appear as one version to users, which is not the case today. With the current XA and SP versions, each has up-to-date features that the other needs and does not yet have. The goal is to bring the two in line with each other.

In the case of Transparent Services Access Facility, the current Release 5 of VM/SP supports it, while Release 1 of XA does not. Meanwhile, Release 1 of XA has the bimodal Conversational Monitor System (CMS), which was just introduced for Release 6 of VM/SP. Release 1 of XA reportedly will be out in March. Release 6 of VM/SP will reportedly be out in the fourth quarter of 1988.

"What we want to achieve is that we no longer want the functional differentiation that we have today, which currently means the applications and program products have different interfaces to deal with," Vance says.

To arrive at just two VM versions, at least two current versions will need to be eliminated.

One slated to be phased out is the High Performance Option (HPO) of VM/SP, according to Dimpfel. VM/SP HPO was introduced to accommodate high-end 370 users before the XA architecture was available.

Second to be phased out is VM/XA SF, which was the initial VM for the XA architecture, however, and was used primarily to guest other operating systems like MVS/XA or the closely related VM/SP.

These two versions will be merged into the new high-end offering, VM/XA SP, which was introduced in mid-1987.

Narrowing the number of versions to two will help in providing as close to one VM environment across all 370 processors as is possible. IBM plans to eventually offer one CMS for both VM/SP and VM/XA SP.

Each VM version will use its own control program. As the overseer of the VM environment, the control program is more closely tied to the actual hardware. As a result, the XA version cannot be exactly like the 370 version, since there are fundamental differences in the hardware each supports. IBM intends to make them as functionally equivalent as possible, Vance says.

The CMS component, however, does not have such restrictions. The new CMS that was introduced with VM/XA SP last year is the basis for the future CMS that will run under both versions of VM.

**End-user functions next**

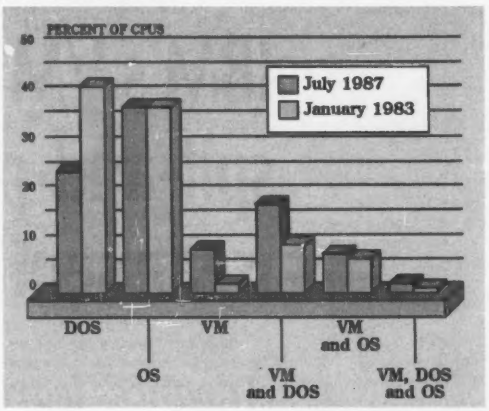
Second to the VM structural changes that will be addressed during the next few years will be improvements to the end-user facilities of VM, company executives say. IBM plans to achieve this by adding facilities such as file sharing, which was introduced in late 1987 as part of VM/SP Release 6 and is slated for availability in 1989.

The goal is to make it easier to write and use applications in the VM environment, according to Arthur Olbert, manager at the IBM Endicott Programming Center in Endicott, N.Y. where such products as VM/SP

*Continued on page 26*

**Operating system mix**

*U.S. IBM and plug-compatible manufacturers' mainframes: January 1983 vs. July 1987*

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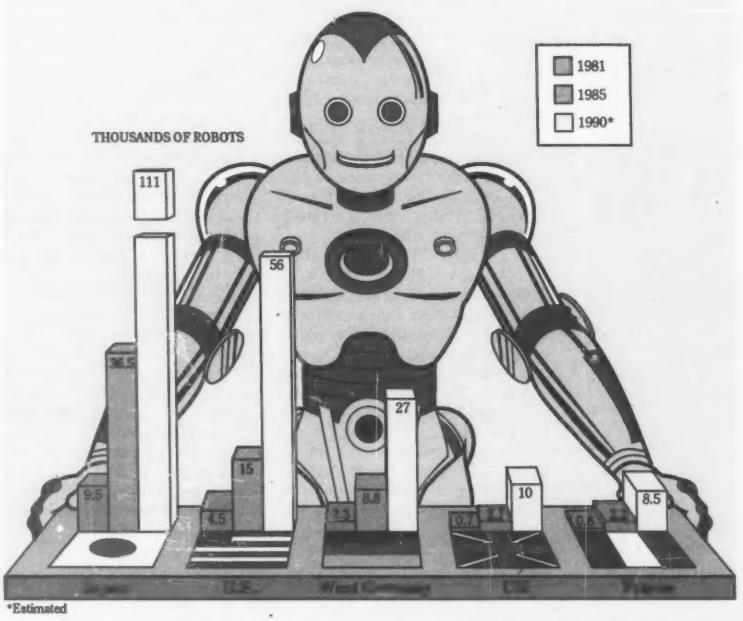
## Forecaster

**Robots in major economies**

*Japan will continue to lead the world in the use of robots*

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CW CHART: FRANK C. O'CONNELL

## *TRENDSETTERS*

James Montgomery admits that he gets "right down in the trenches" with his employees. Using this hands-on approach to management, he runs a tight ship in the information services shop at United Pacific Insurance Co.

As vice-president of the group at the firm's Federal Way, Wash., facility, Montgomery says he knows each of his 75 workers personally and that he stays close to what they're doing. "We establish project dates, and we meet them. We do that by working very closely together," he says. "I don't go sit in my office all day."

Montgomery started working at Union Pacific in 1964. Five years later, he left the company to return to California. He spent the next decade working for an independent software company, running a service bureau in Los Angeles and acting as a consultant. In 1982, he returned to Federal Way and United Pacific.

Now, after holding his current position for 2½ years, Montgomery is in charge of a totally IBM shop featuring an IBM 3090 Model 150E. During the next several months, his largest task will be closing up the Washington shop to merge it with United Pacific's corporate headquarters in Philadelphia. Those of Montgomery's employees affected by the consolidation will be awarded severance packages, he says, while some of them will be moving to the Philadelphia site.

When he gets there, Montgomery will take over part of the information services department as the vice-president of home office systems. His management philosophy will be part of his baggage. Key to running a tight MIS ship, Montgomery says, is building a service organization. "Most of my peers don't see themselves in a service capacity, but they are," Montgomery says. "They have customers and have to service those customers."

Service, Montgomery says, is a trend that information services organizations are being pushed toward, "and that's where most all of us are going to have to be over the next few years to survive."

ALAN J. RYAN

## *FUTURISTS*

Cutbacks in MIS hiring will not result from the current downturn in the economy, says Steven Young, manager of technical search at New York-based recruiting firm Pencom Systems, Inc.

"Although there's always the possibility of wage freezes, hiring will continue to expand because the technology continues to expand," Young says. "Companies still have applications that must be supported and maintained."

But Young also stresses that MIS workers must keep abreast of what is happening in the industry and develop a specialized niche in order to remain attractive as employees. Managers must make those opportunities available to interested staff members, Young says.

"Employers who fail to provide support for anyone seeking to broaden his area of expertise will find themselves losing the cream of the crop," Young warns. "If the opportunity to learn and advance is not there, a good worker will look for other possibilities."

SUZANNE WEIXEL

## Forecaster

### Growing technologies
*Estimated volume of shipments by 1990*

| | 1981 | 1990 | Average annual growth rate |
|---|---|---|---|
| Robotics | 109,681 | 1,220,922 | 90.9% |
| Computer-aided design | 7,499 | 83,491 | 6.2% |
| Vision systems | 1,846 | 20,556 | 1.5% |

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CW CHART

## *TRENDSETTERS*

When is processing data faster on PCs than it is on mainframes? When you're at Echlin, Inc.

Richard Hock, Echlin's MIS director, has found a way to keep his company on the cutting edge in data processing while saving the firm more than $200,000 annually.

Echlin is an automotive replacement parts manufacturer in Branford, Conn., that previously used an IBM 4341 mainframe for its processing. But Hock recently converted Echlin's DP work load to nine microcomputers, including Compaq Computer Corp. Deskpro 386s and IBM Personal Computer ATs.

Hock says the 2.8-million instruction per second (MIPS) rating on the Deskpro 386 makes it faster than many larger systems. On the entire IBM System/38, he explains, the highest MIPS rating is 1.64, and the IBM 9300 line offers no MIPS rating higher than that of the Compaq machine, either. The 4381 Model 13 is the first model that exceeds the MIPS rating of Compaq's Intel Corp. 80386-based microcomputer, he adds.

The 26-year DP veteran says his department is basically running one application per micro. "We did a study 2½ years ago," Hock says, "and proposed that we would save $300,000 by switching to micros." Hock says the project was a low-risk venture. "The only thing that we would be out would be the cost of the microcomputers and the network if we couldn't go further."

Since then, the company has moved one application at a time onto a Novell, Inc. local-area network. Files are stored in a proprietary file server, the Novell S/Net. Users on the system select a password-protected application, and the software, data files and computer programs are downloaded from the file server to the micro. When the job is completed, it is sent back to the file server.

"We've got complete protection, just as we would in the mainframe," Hock stresses.

By mid-January, Hock says, the final application will be moved to the micros. "We've reduced our [total processing] cost from $900,000 to $700,000 and have another $100,000 to go," he says. Additionally, maintenance on the mainframe was $70,000; that cost has been reduced to approximately $20,000. Hock also eliminated some $60,000 to $65,000 in software rental from IBM and dissolved four jobs, he says.

How did he come up with such a radical idea? Hock, having held his current post at Echlin for more than nine years, says he encourages participation from his employees. "The original idea about the micro project came from one of my staff," he says. "I believe giving staff members as much responsibility as possible makes them happy and produces the best results."

ALAN J. RYAN



## IBM's VM

CONTINUED FROM PAGE 24

and VM/IS were designed.

"Applications are the things customers focus on. There's a broad range of applications on VM/CMS today," Olbert says. "But we want more. The way to get more is to encourage people to give us more and make it easier for them."

Along this line, there will be program products announced this year for the high-end version of VM system, VM/XA SP, Dimpfel says.

Dimpfel acknowledges that so far, no third-party vendors have announced XA support in their applications. "We have just recently gone out and described the interfaces to them," she says. "You'll see that unfold over time."

# From the MIS trenches

## *Technology outlook for 1988*

It's easy to elicit predictions for the coming year from consultants and analysts. But what do the people who put computing technology into action have to say about 1988? What are their plans? And what technologies do they have on their wish lists?

*Computerworld* senior writer Stanley Gibson asked those questions of some of the nation's top MIS executives. Here are their answers.

**MICHAEL A. KAMINSKI**
**Manager of the Manufacturing Automation Protocol (MAP) program for General Motors Corp. in Warren, Mich.**
"We will see the beginning of implementations using MAP 3.0 and, in the process industry — which includes chemical, petroleum, pulp, paper and food processing companies — will see increased emphasis on TOP [Technical and Office Protocol]. However, TOP will also be used increasingly in the aerospace and auto industries."

**GARY BIDDLE**
**Vice-president of MIS at American Standard, Inc. in New York.**
"Next year, you're going to see a lot more information engineering, in the form of CASE [computer-aided software engineering] tools. There will also be artificial intelligence products that will improve programmer productivity.

"I also hope to see more confirmation of what IBM's mid-range strategy is going to be as the 9370s are rolled out. I don't see Silverlake as having a large impact in the Fortune 500."

**GEORGE DINARDO**
**Executive vice-president at Mellon Bank NA in Pittsburgh.**
"I'm looking for more fiber optics as well as laser disks. We want to eliminate microfiche with laser technology.

"I also hope for continued improvement of disk and I/O technology. I also would like to see the so-called 'hyperchannel' that will provide mainframe-to-mainframe connectivity. That's the super-secret technology IBM has that everyone knows about."

**EUGENE F. BEDELL**
**Vice-president and manager of information services at First Boston Corp. in New York.**
"This year, we will begin the obsolescence of the programmer and the birth of programming at a higher level. Programming will be done by systems analysts using CASE technology.

"And we'll begin to see true integration of PCs, departmental computers and mainframes. Instead of the PC hanging off the mainframe, the mainframe will hang off the PC."

**DUDLEY COOKE**
**General manager of information systems for Sun Company, Inc. in Radnor, Pa.**
"I am looking for advances in networking voice mail. A company like Sun has multiple locations and multiple private branch exchanges. What we want to do is network those systems together so that a person who calls one location can leave a message for someone at another.

"We also want to tie voice mail into IBM's Professional Office System. Later, we want to have voice recognition on the screen."

**JOSEPH BROPHY**
**Senior vice-president at Travelers Insurance Co. in Hartford, Conn.**
"We are moving aggressively with expert systems technology, not for exotic applications but as a bread-and-butter tool. We are putting editing modules in a rules-based format because it is easier to change rules than spaghetti code. We have at least 40 expert systems applications in development. We'll see more production systems expressed as expert systems protocols."

**MICHAEL HESCHEL**
**Vice-president of information systems at Baxter Healthcare Corp. in Deerfield, Ill.**
"There will be more electronic data interchange usage, including electronic payments, especially in our business.

"I also see a price/performance reduction in mainframes. The IBM 3090F models will be here in the first quarter, and there will be another price reduction in the last quarter. Eventually, you will have the computing power of at least an IBM 3081 on a desk."

**MICHAEL SIMMONS**
**President of Fidelity Systems Co. in Boston.**
"We are working on integrating our local-area networks with our wide-area network. Since we are a dispersed, around-the-clock operation, very soon, if not already, the network itself will become our computing facility.

"We also look forward to more use of CASE. CASE is the latest buzzword. The industry is buzzword-driven after all. You can't write code in stone, so you will have to go to CASE eventually."

# A coming revolution in mainframe storage

## *IBM seen moving away from 14-in. disks*

BY JAMES CONNOLLY

Change in the world of mainframe storage, which moved at an evolutionary pace for almost 25 years, is set to accelerate to a revolutionary rate.

Since the mid-1960s, the heart of an on-line storage system has been the 14-in. disk drive attached to a host CPU. Evolutionary change has brought faster access times, faster channels, cache and storage management software.

Now, storage industry observers say, IBM plans radical changes with smaller — possibly 5¼-in. — disks as replacements for the standard, 14-in. IBM 3380 disk systems. In addition, recent IBM product introductions and development efforts indicate that the relationship between storage devices and mainframes is in a transition that will speed up through IBM projects with code names like Summit and Jupiter.

Some observers report that Summit, the expected follow-on to the IBM 3090 mainframe, will feature clusters of IBM 370-type CPUs linked via a bus and pools of storage devices. Jupiter reportedly focuses on storage-management software and a back-end data base machine and will off-load storage-related tasks from the CPU.

Summit will probably be announced in 1989 for 1990 deliveries, according to Framingham, Mass., market research firm International Data Corp. (IDC). Summit will feature faster CPUs and clustering capabilities that unite multiple 370-architecture machines on a high-speed bus, IDC analyst David Vellante says.

Analyst Rick Martin, of the New York investment firm Sanford C. Bernstein & Co., says Jupiter, IBM's eight-year project to manage storage, now is called Ole because it will result in an off-load engine that will manage data bases.

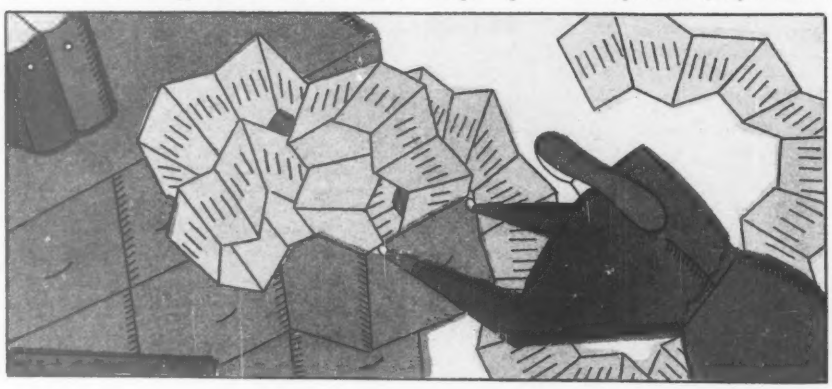
IBM already has begun moving data management and intelligence away from the CPU. That trend is likely to continue with Ole, as direct-access storage devices (DASD) and IBM 3990-type controllers handle much of their own backup and space management. Some observers expect the Summit-type clusters to access pools of storage devices through fiber-optic channels instead of having dedicated strings of DASD for each CPU.

Arrays of low-cost 5¼- or 8-in. drives and high-speed 10¼-in. disks could replace the 14-in. 3380 within a year or so.

Fred Moore, director of worldwide product marketing for peripherals maker Storage Technology Corp., says he sees "a slow-growing possibility" that IBM will offer a quad-density 3380. But he also thinks the mid-1990s will see user-installable and -maintainable rack-mounted disks in sub-14-in. form factors.

Speculation about new IBM DASDs began almost immediately after IBM announced its third generation of 3380 disk drives, the 3380 Models J, K and CJ2, and its 3990 storage controllers just four months ago.

"Looking at the Js and Ks, we think they could be only a 12- to 18-month product line," says Louise M.



PHILIPPE WEISBECKER

Biggs, a senior industry analyst for San Jose, Calif., market research firm Dataquest, Inc. Biggs is one of several analysts who expects sub-14-in. drives.

That next generation is expected to replace the 2.5G-byte Model J, which IBM presents as a drive for customers demanding high performance because of its 12-msec seek time, and the 7.5G-byte Model K, which IBM touts for its capacity.

Biggs says IBM will emphasize capacity and price in the new drives. "I'm starting to question the philosophy that has been espoused for the past few years about people wanting high performance. The market is still capacity driven. There are only a few users who will pay a premium for performance," she says.

Biggs also observes that replacing the 3380 in 1988 would continue the IBM pattern of eight-year product cycles for DASDs and controllers. She highlights the growth of the disk market as it has paralleled demand for CPU power. "In 1986 alone, IBM shipped more in the way of gigabytes of high-end DASD than they did in the entire eight years of the 3350 program," she says.

**Dataquest's Louise Biggs**

**Replacements for 3380**

An analyst specializing in the disk drive market, James N. Porter, president of Disk/Trend, Inc. in Mountain View, Calif., says he expects not one but two replacements for 3380s.

Porter expects a high-performance drive with 10¼-in. disks and 50% more throughput than the 3380 Model J later in 1988. He also predicts the new model will have a 5.5-msec latency time, 9- to 10-msec positioning time and 6M byte/sec. transfer rate, compared with an 8.3-msec latency, 12-msec positioning time and 3M byte/sec. transfer rate for the Model J.

"Not all IBM customers want this type of drive. This is not everyman's drive. It's a superperformance drive," Porter says, noting that some performance-oriented customers today load disks to only 30% capacity.

Porter sees most customers wanting the second 3380 replacement, which will use 5¼-in. disks when announced in the second half of 1989. That drive reportedly will be rack-mounted in arrays. Porter says the 3990, not the user, will know if it is accessing 5¼- or 10¼-in. disks.

Several analysts say that packaging smaller disks in arrays, whether they use 5¼- or 8-in. media, will help users utilize 3990 features such as dual copy, which allows a user to write the same file to separate disks.

Bernstein's Martin says the next DASD will use disks of about 10 in. with a capacity of 75,000 byte/track, compared with the 50,000 byte/track capacity of the 3380s. The disks will support greater transfer rates, Martin says. "If you spin a 10-in. platter with 75,000 byte/track at the same speed as a 3380, you can get more than 4.5M byte/sec. If you go faster, you get 6M bytes."

Another performance advantage of the next generation is that IBM plans to use separate read and write heads moving at different speeds with different degrees of precision because positioning a head for a read can be more general than for a write, Martin says.

In general, the analysts concur that conversion headaches will keep IBM from abandoning count-key-data storage in favor of a more efficient fixed-block method. They also agree the 3990 plays a key role in off-loading data management from the CPU.

Biggs notes that, with four times the cache of the 3880 at 256M bytes, IBM "is endorsing the idea of keeping more information in random-access memory, rather than writing it out to disk."

She says that trend will continue because the cost of cache dropped 60% in three years while the manufacturing efficiency of disk drives slowed.

Both she and Vellante note that a key feature of 3990s, particularly in transaction processing, is their ability to write to, rather than just read, cache.

Vellante outlines a scenario in which clusters of mainframes, some of them Summit CPUs and others 3090s, are linked by a high-speed bus. He says that in the near term, the bus, which he likens to the Digital Equipment Corp. VAXBI, may run at 18M byte/sec.

Vellante says 3990-type controllers will hang off that bus with the CPUs effectively sharing controllers and their storage devices in storage pools.

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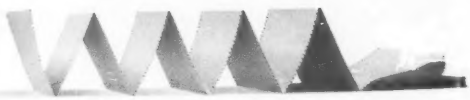
paper,  printed

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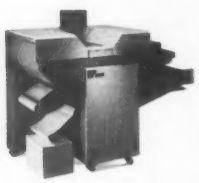
you'd say  Bull.

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IBM hiked the channel speeds between 3090 hosts and controllers from 3M byte/sec. to 4.5M byte/sec. in September, but Vellante is among those expecting fiber-optic channel rates to rise to 6M byte/sec. in 1988. He says the 3990 has the potential to arbitrate various channel speeds, depending on the application, which is only one of the ways the 3990 is different from the 3880.

"You have to look at the 3990s as basically the equivalent of a 3090 Model 180E. They have a ton of cache in there now and can go for more with even denser memory chips," Vellante says of the controller, due to ship in July.

He says some 3990 features and offerings such as IBM's Disk Facility Product (DFP) software are parts of Jupiter. Once Summit and Jupiter are in place, the CPU will be relieved of many tasks, such as backing up disks with 3480 tape subsystems, according to Vellante.

Vellante also predicts that in 1988, IBM will take steps to allow direct connections between 3990s and the 3090's expanded storage, thus bypassing main memory and relieving the CPU of one more transfer function.

**Disk/Trend's Porter**

One IBM competitor expects elements of Jupiter, launched at the behest of the IBM users group Guide International Corp., to be announced in early 1988. Don Murphy, vice-president of sales for the Systems Software Marketing Division of Sterling Software, Inc. in Sacramento, Calif., says IBM knows the value of storage management.

"The message to me is that for many years, IBM had mixed allegiances on storage management because they wanted to sell more DASDs. Now they need storage management to sell DASDs. IBM is alluding to a quad-density drive. Those devices exceed the capability of data center personnel to manage the space," Murphy says.

Jupiter software and utilities being planned by vendors including Sterling will move data up and down the hierarchical pyramid often used to rank an organization's data, according to Murphy. That pyramid assigns the most frequently accessed data to the fastest, yet smallest, storage area at the pyramid's peak, in memory. The least accessed data is assigned to the broad pyramid base, represented by less-expensive off-line tape storage. In between lie technologies such as DASD, electronic disks, cache and expanded storage.

Murphy sees a trend toward users allocating data sets to logical pools based on user-set parameters. For example, parameters might say at what age a data set is moved from DASD to tape and will specify what related data sets are moved with it, while allowing users to intercede if the data is needed.

**'Filling gymnasiums'**

Storage Technology's Moore estimates that less than 10% of IBM mainframe sites actively manage storage. "That's got to come way up. Otherwise, people will be filling gymnasiums with DASD and won't have any way of managing it," Moore says.

But he claims storage management software is lacking. He cites as key failings the shortage of storage management software for IBM VM and the inability of even IBM MVS-based software to differentiate between types of DASD — electronic disks and varied densities of cached and noncached magnetic disks — and 3480-type tape drives — manually loaded and autoloaded such as Storage Technology's 4400 library.

Moore speculates that an I/O engine serving multiple hosts and storage pools even for MVS is at least five years away. He notes the trend toward shared DASD is well under way because a recent Guide survey showed that an average of 2.2 processors now share disk subsystems.

He says he expects outboard movement of data from disk to tape with little or no CPU involvement by 1990 and users seeing logical views of data without concern for where that data is in the storage system by 1992.

Bernstein's Martin, who reports that Ole/Jupiter is aimed at developing a data base engine, warns people not to think of Summit as a CPU. Instead, he says a new CPU, Jupiter/Ole, clustering, a new front-end processor, the new disks and the 3990 all are elements of Summit that will be phased in over the course of several years. "When you've got all of the pieces together, then you've got what people call Summit," he says.

# Storage management approaches

When asked what storage products they want IBM and its competitors to provide, managers recently focused on storage management software, the system-managed storage capabilities requested by IBM users group Guide International for information processing at Texaco, Inc. in Houston.

"I would like to get the end user and application programmer away from having to have any knowledge of the media," McDonald continues, "and away from knowing whether or not they need single-capacity or dual-capacity direct-access storage devices [DASD] or cached DASD or tape."

He says IBM has made progress toward a system-managed storage product, particularly with its Data Facility Hierarchical Storage Manager (DFHSM) offerings, but that he does not expect a full-featured system-managed storage product before 1990.

He notes that carrying out system-managed storage not only requires new product development by vendors but also means user organizations will have to identify all user data and classify it for hierarchical storage.

McDonald says that he is less concerned with the exact type of media — for example, whether a disk is 14 in. in diameter or smaller — than he is with the reliability of the storage device. He does, however, see a potential need for an archival storage system that supports fast writing, even if the read capabilities are slow.

**I would like to get the end user and application programmer away from having to have any knowledge of the media.**

ED MCDONALD
Texaco, Inc.

### 'Very labor-intensive'

James Everitt, capacity planner for Weyerhaeuser Information Systems in Tacoma, Wash., says, "My interest is not so much in the hardware itself as the integration of the hardware and software. It is very labor-intensive to manage these large blocks of DASD."

He would like system-managed storage, he says, but thinks it is five to eight years away from complete implementation. One of first things he would like to see is more use of 3480s in relationship to DFHSM.

Everitt reports that his company has not committed to 3380 Model J or K drives and that most of the firm's concentration has been on older 3380 A04 and B04s. He says they do the job and cost less than the denser disks.

Greg Parker, a performance analyst and capacity planner for Mountain Bell in Salt Lake City, adds, "I'd like to see a simple method, some tool, for plugging in cost accountability so we aren't always talking about space." Parker questions the value of the offering of increasingly denser disks, such as the triple-density 3380 Model K and the rumored quad-density follow-on product.

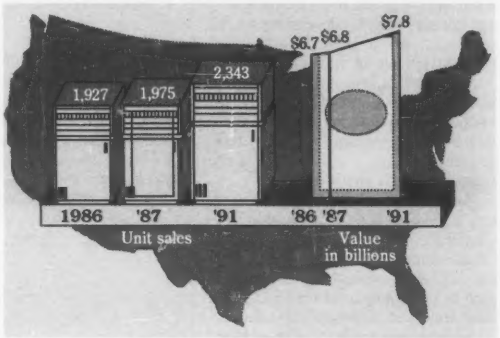
He claims his concerns about the denser disks center on the trade-offs that are being made in sacrificing performance for a lower cost per megabyte of storage. Parker says he is concerned about the new devices and their impact on performance.

JAMES CONNOLLY

## Forecaster

### How many mainframes, and what will they cost?

*A prediction of U.S. mainframe sales and their values*

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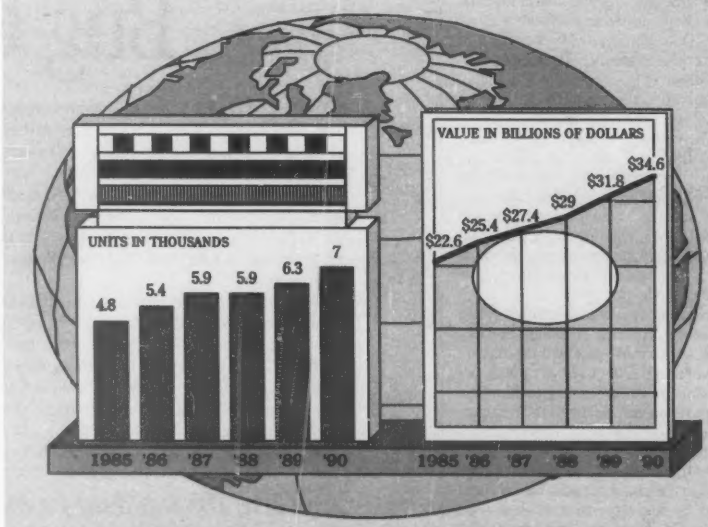
## Forecaster

### Worldwide mainframe outlook

*A four-year prediction of mainframes* sold and their values*




*Includes supercomputers and traditional mainframes such as IBM's 3000, 3030 and 3090 series and similar computers

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CW CHART

# Optical storage: An option

People waiting for optical disks to impact mainframe-class on-line applications may have a long wait — possibly forever — according to industry observers.

"Optical storage has been four years out for the last four years, and that is a tough statement for us, because we went so far as to announce our own product back in 1983. The role for optical may be in the write-once read-many area," says Fred Moore, manager of worldwide product marketing for Storage Technology Corp.

Louise Biggs, a senior industry analyst for San Jose, Calif., market research firm Dataquest, Inc., adds that optical media will be slower than magnetic disks and more expensive than tape drives for several years.

### Cartridge search

However, she says, optical disk storage has a place in the mainframe world, particularly in areas in which users want all data on-line without the bother of an operator searching for tape cartridges.

**Alternative storage technologies may have the greatest opportunity to compete with magnetic disk and tape subsystems — the area most analysts call mass storage — in which limited on-line access to large quantities of information is required.**

Alternative storage technologies may have the greatest opportunity to compete with magnetic disk and tape subsystems — the area most analysts call mass storage — in which limited on-line access to large quantities of information is required.

It is an area of the market in which IBM once offered its 3850 honeycomb-style cartridge system.

### 'Near-line' storage

Moore touts his firm's 4,400 automated tape library for what Storage Technology calls "near-line" storage. He is joined by Don Murphy, vice-president of sales for Sterling Software, Inc.'s Systems Software Marketing Division, who says that one of the strengths of automated libraries is that they use standard media.

James N. Porter, president of Disk/Trend, Inc., adds, "Storage Technology is going to be a huge hit with its library. IBM won't have another mass-storage device for another four or five years." He says that what IBM eventually offers for mass storage may be optics-based.

Dataquest's Biggs maintains that there is a mass-storage role to be played for tape and optical disk systems and notes that digital audio tape may also become a factor.

In addition, she says that mid-range systems users may be more willing to experiment with storage options than are those at large data centers, which cannot as easily survive a storage subsystem failure. She singled out Tandem Computers, Inc. as one example of a systems vendor that is moving ahead with optical technology.

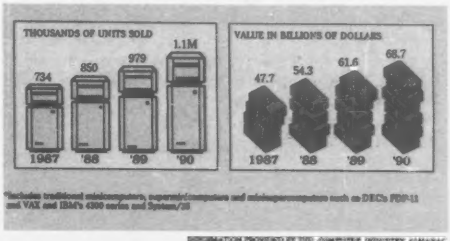
She says one area to watch, for those interested in which storage technologies hold promise, is the mid-range processor field, which includes medium-size business systems and engineering workstations. She notes that those workstations need large on-line storage capacities for even simple engineering drawings.

JAMES CONNOLLY

## Forecaster

**Worldwide mini outlook**

*A four-year prediction of minicomputers* sold and their values*




*Includes traditional minicomputers, supermini/computers and minisupercomputers such as DEC's PDP-11 and VAX and IBM's 4300 series and System/38

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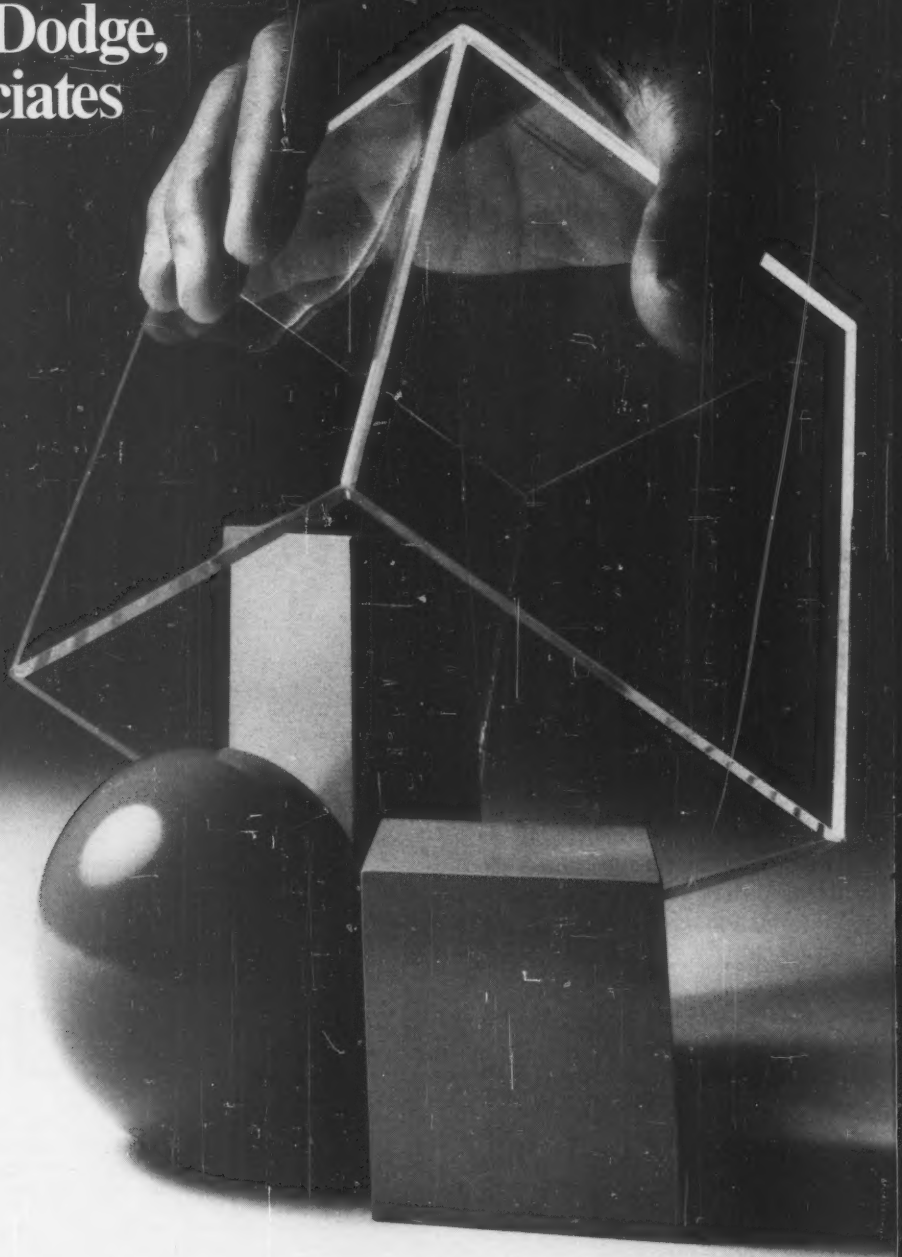

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# How to play a proactive role

Seeking to play a greater role in shaping business direction?

Well, Darwin John, corporate vice-president for information systems at Scott Paper Co., plays a proactive role in his company, and he has several suggestions for aspiring managers who want to ensure that their voices are heard above the din.

While John recommends schooling and experience, he emphasizes the importance of managers' looking at the world in a certain way.

To be exact, he looks at the world in a way that he describes as systematic, conceptual, holistic or seeing how things fit together.

"One of my beliefs is that you can approach things at one of three levels," says John, who worked in engineering and finance before going into information systems.

The first is an operational level — one at which facts and numbers are found to prove that something is one way or another.

The second is an issue level — reconciling evidence with experience.

The third is a conceptual or principle level — trying to discover or create something new, an MIS architecture, for example.

"Any particular question probably can be addressed at one or another level," John maintains.

"People tend to approach things on one level. I believe one of the shifts that those of us that are trying to run MIS organizations have to do is move up that scale.

"The nature of our field and where it's going is discovering new things," John adds. "We need to be comfortable at that level."

DAVID LUDLUM

## Forecaster

**How many memory devices, and what will they cost?**
*A U.S. projection of four memory options and their values*

| | Floppy disks | | Optical disks | | Rigid disks | | Tape drives | |
|---|---|---|---|---|---|---|---|---|
| | Units shipped | Value | Units shipped | Value | Units shipped | Value | Units shipped | Value |
| 1982 | 12.2M | $2.7B | 20,000 | $134.4M | 4.7M | $13B | 694,400 | $2.9B |
| 1987 | 13.2M | $2.5B | 80,100 | $336.2M | 5.8M | $14B | 1M | $3.5B |
| 1991 | 16.9M | $1.7B | 1.6M | $2.2B | 7.9M | $15.6B | 1.7M | $4B |

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CW CHART: FRANK C. O'CONNELL

## *FUTURISTS*

A problem that has been frustrating users for years is coming to a head, says Robert R. Ackerman Jr. Listen, he claims, and you can hear the growing roar of users clamoring for standards.

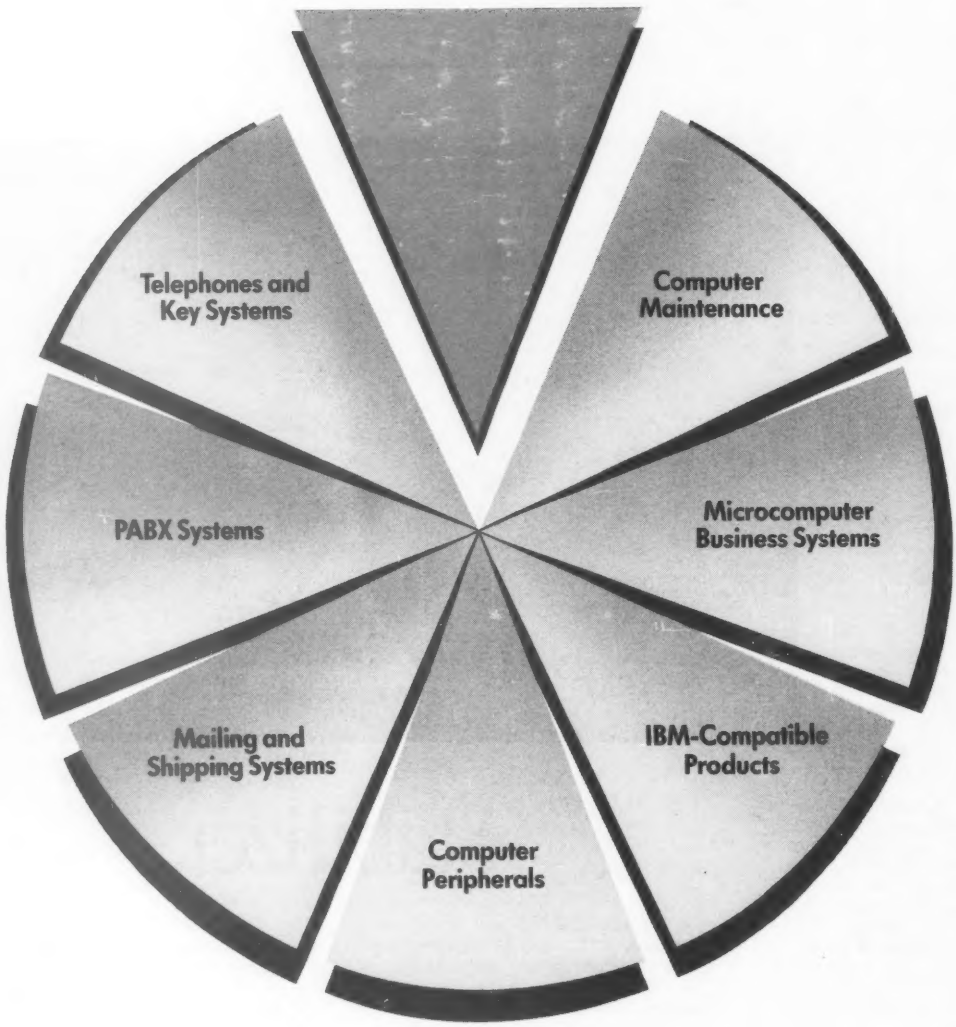
Ackerman is the chief marketing officer of X/Open, a nonprofit group of system vendors committed to developing a common application environment for the computer industry. "In the past, the government led the push for standardization. Now, the commercial segment is starting to focus their procurements on standards and standards-based technology.... To increase productivity and reduce costs, they need vendor-independent applications," he says.

Ackerman says the supply side of the marketplace is going to have to come up with products based on standards as well as implement standards within vendors' own proprietary strategies.

"The single-vendor shop is a thing of the past. Today, the user needs tools and resources that provide maximum flexibility so he doesn't end up in a proprietary cul-de-sac. The users' need for compatible systems from different vendors is what's going to drive standardization in the years to come.

"It is not going to be easy to get the vendor community to cooperate in areas where they have historically competed," he concludes. "That is the challenge. That is the solution."

SUZANNE WEIXEL

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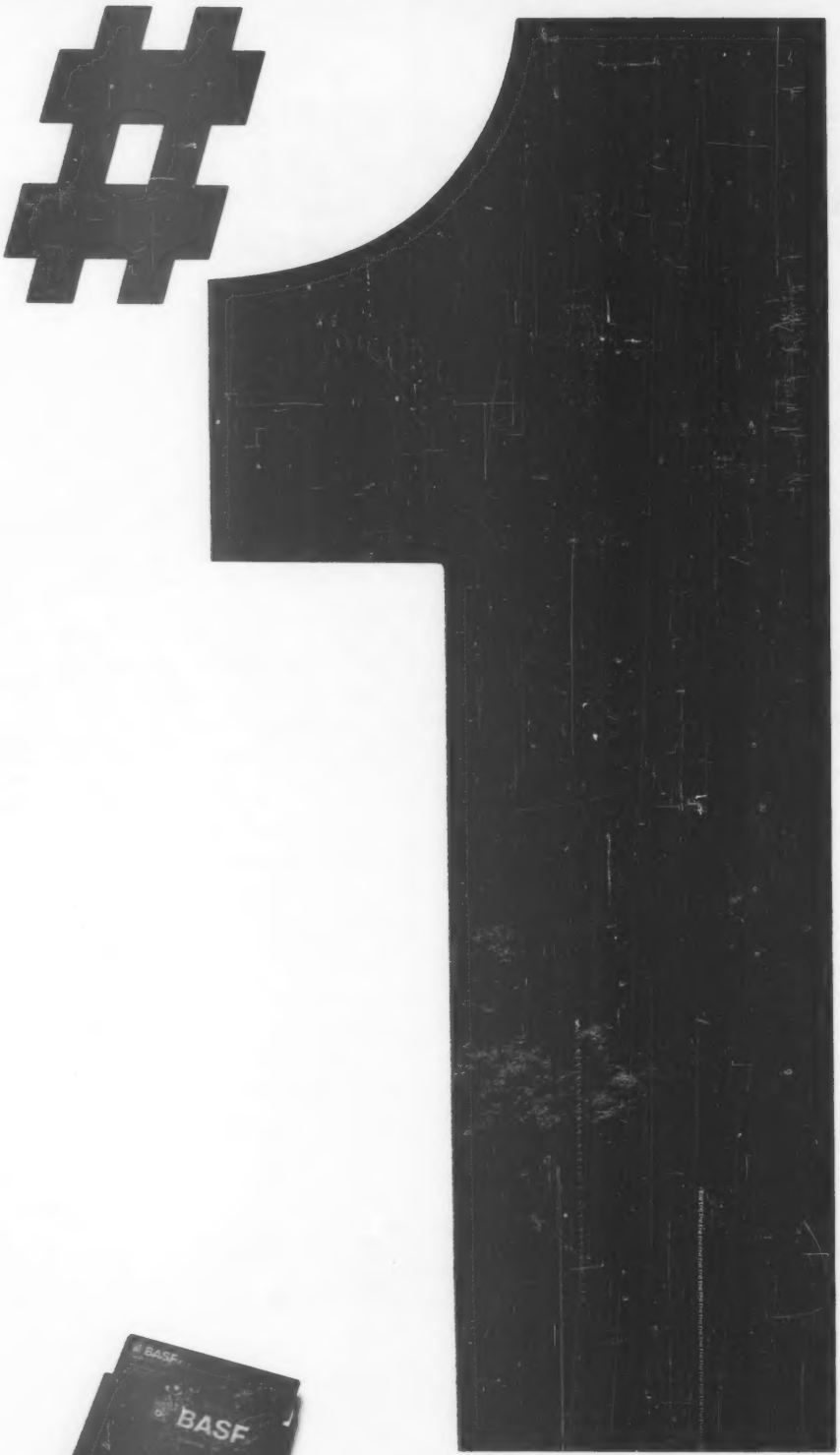




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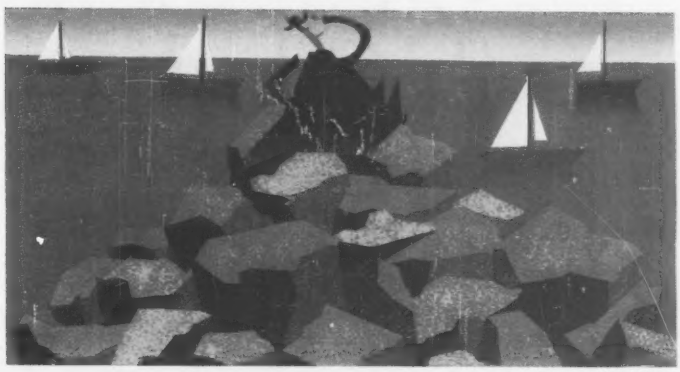
BASF

# Waiting for OS/2

## *Uncertainty clouds the horizon for users*



TERRY ALLEN

BY DOUGLAS BARNEY

By the time this story hits the street, IBM will have shipped OS/2, the large-memory multitasking operating system; a couple of OS/2 applications will likely have been released; and very, very few users will have installed any of it.

Despite all the complaints of personal computers being hamstrung by the aging Microsoft Corp. MS-DOS, there are still no groundbreaking applications to compel users to move to OS/2. And those few brave souls who take the first plunge in search of extra memory can expect a nightmare in converting to the latest in microcomputer operating systems.

For individuals, converting to OS/2 means upgrading applications, dealing with megabytes of MS-DOS-held data and making sure the machine has enough memory and disk storage to handle the burden of a large multitasking system.

For corporations, this burden is simply multiplied by the number of users planning the move. In many larger companies, thousands of PCs must be readied, thousands of applications upgraded and users retrained. Just tracking down warranty cards and finding those vendors that offer upgrades promises to be an agonizing task.

In addition, it is expensive. To run OS/2 and the Presentation Manager, the machine must have an Intel Corp. 80286 or 80386 processor, IBM Enhanced Graphics Adapter graphics, some 3M bytes of random-access memory, a hard disk and a mouse. Add to that the $325 cost of the operating system, software upgrades and user retraining, and it could reach several thousand dollars per PC.

It is no wonder that MIS professionals are putting off the move to OS/2 — for at least a year, in most cases.

In fact, it will be nearly a year before all the OS/2 pieces themselves are available for MIS scrutiny. Although the operating system core is currently shipping, the Presentation Manager, its Apple Computer, Inc. Macintosh-like interface, will not be available until October, according to co-developers IBM and Microsoft.

And with many key software players focusing the bulk of development on the Presentation Manager, a meager selection of software is expected throughout most of 1988. "It will be a relatively slow phase-in because I don't see the vendors all delivering OS/2-compatible versions immediately," says Mike Schmidt, manager of systems planning and administration for Moody's Investors Service, Inc. "But it is inevitable that people will move in that direction once the operating system and applications are delivered."

### Users hold back

Most users are content to wait for the Presentation Manager and its applications to arrive, or even longer, before installing OS/2 on anything more than an evaluation basis. Even leading-edge firms such as General Electric Co. and Manufacturers Hanover Corp. say they expect at least two years to pass before OS/2 moves in.

"I think it is going to be a long time before OS/2 becomes a standard. People have enough trouble with DOS. OS/2 is going to completely throw them for a loop," says Frances D. Mendelsohn, information center manager at the U.S. Food and Drug Administration.

Just how long is long? According to Forrester Research, Inc. in Cambridge, Mass., OS/2 will become the standard microcomputer operating system by 1990. But based on extensive interviews with users, that means a nearly wholesale shift in 1989 and 1990, for there will be little or no activity in 1988.

"I don't think OS/2 will shake out before the end of next year. It will

probably be two years before IBM puts all the functionality into OS/2 anyway," says Richard H. Heinrich, manager of statistical processing for Central Steel & Wire Co. in Chicago.

Another user agreed. "We don't feel that a move to OS/2 at this particular time is going to do us a lot of good," says Robert Goldberg, vice-president of Old Stone Bank in Warwick, R.I.

**Won't be budged**

U.S. West Direct, which produces the Yellow Pages, will not move horizontal productivity applications to OS/2 for two to three years, according to James Jennings, a U.S. West technology analyst active in in-house OS/2 applications development.

The only factor that could speed up OS/2 implementation schedules is a blockbuster application. "If Lotus comes out with a version of 1-2-3 for OS/2 that is absolutely phenomenal, we will go for it. If not, we won't," says Tom Cornell, a consultant with Peat, Marwick, Main & Co.'s airport consulting services area.

But the applications that will be available in the first half of 1988 will not exploit the full capabilities of OS/2, such as its graphical user interface and advanced interapplication data sharing.

**Behave yourself**

"Vendors are merely developing well-behaved applications that run under OS/2," says Jeff Tarter, publisher of "Soft-Letter," a Cambridge, Mass.-based newsletter. These applications, which include Lotus Development Corp.'s 1-2-3 Release 3 and Borland International's Paradox, should do little to lure users into the expensive world of OS/2.

Many expect the first blockbuster to be a Presentation Manager product. Lotus hopes to hit it big with a graphics-based version of 1-2-3, but is also hedging its bets with an character-mode OS/2 version of 1-2-3 due out in spring 1988.

Nearly all users interviewed are anticipating the move to OS/2 to be largely a move to the Presentation Manager. "We

## OS/2's the ticket

Microsoft Corp.'s MS-DOS barely cut it. Unix was too demanding on hardware. So for Mobil Corp. Senior Geologist James G. Cook, OS/2 seems to be the answer.

Cook is responsible for a geologic workstation that currently works under MS-DOS. The only problem is that when the system, which does sophisticated mapping among other things, computes, it often takes hours. Meanwhile, highly paid Mobil employees are idle waiting for the system to complete its mission.

"Once it starts computing, you have lost the machine. Since this is the major workstation for most of the geologists, it is disconcerting not to be able to do anything else for extended periods of time," Cook explains.

With OS/2, however, the system can compute merrily while users perform other tasks, an approach that saves both money and user frustration.

Because the Presentation Manager component of OS/2 will not be available until late next year, Mobil will move first to the OS/2 kernel. Cook will later port the system to the Presentation Manager. Initial pieces should be up and running by the third quarter of 1988 and will run mainly on IBM Personal System/2 Model 60 computers.

DOUGLAS BARNEY

are developing some applications under the existing Windows environment in anticipation of moving to OS/2 Presentation Manager. We are trying to get into the SAA world, and we think that is where it is going to be," U.S. West's Jennings explains, referring to IBM's Systems Application Architecture.

"In our environment, [the interface] is very important because we have such various systems around," Jennings adds. "We need to access multiple mainframes and want the applications to look the same to the end user."

Another user agrees. "It is my belief that OS/2 without the Presentation Manager isn't much of a product. One of the big selling points is its Mac-like interface. If you don't go with that, you end up with something like you have now with DOS," Peat Marwick's Cornell says.

But one user is still skeptical, and points to the failing of Microsoft Windows as an example.

**'A barrier'**

"Power users resent Windows. It is a barrier between them and their work," the FDA's Mendelsohn says. "If God wanted me to use a mouse, he would have given me a third hand."

Mouse convert Cornell sympathized but disagrees with Mendelsohn. "I despised mice," Cornell says. "Now I can't live without them."

While MIS have may the final say as to whether OS/2 becomes a new operating system

*Continued on page 44*



# The yellow pages go high-tech

People looking up the local pizza joint in the yellow pages do not generally think about microcomputer operating systems, but James G. Jennings does.

As a technology analyst for US West Direct, Jennings is responsible for automating the production of the yellow pages directories, and OS/2 holds some promise in this area.

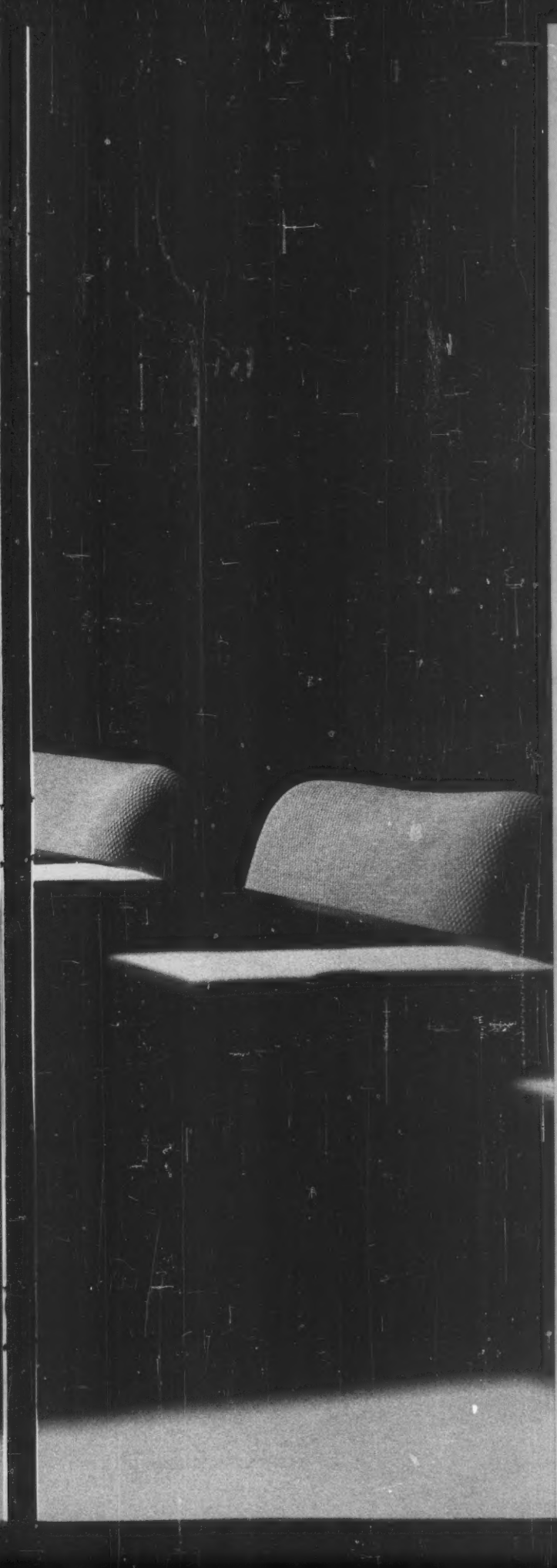
US West Direct has not made a final decision, but signs are pointing toward using OS/2 as the operating systems base for a universal workstation that can access a variety of host computers through a common user interface.

The firm is currently developing the system under Microsoft Corp.'s Windows but hopes to port it to the Presentation Manager when it becomes available late in 1988.

Jennings is following the Presentation Manager path because it represents one of the first steps toward IBM's Systems Applications Architecture. "At the point in time with the release of new compilers, we assume that we will be able to develop portable software," Jennings says.

The system will be based on IBM Personal System/2 Model 50s and will be used for service processing, order processing, customer service and manufacturing.

DOUGLAS BARNEY



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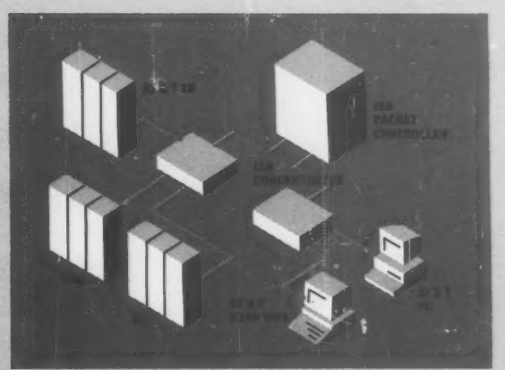

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## OS/2

FROM PAGE 41

standard, most users maintain that they will let individuals decide whether OS/2 is right for them. "We are in no position to say no to people," Moody's Schmidt explains.

IBM's OS/2 Extended Edition, which includes proprietary data base and communications functions and is due out in July 1988, might prompt some true Blue shops to adopt OS/2 sooner than expected.

"The communications part interests us a great deal because our information center is part of a mainframe computer center, and we are always fostering micro-to-mainframe communications," Mendelsohn proclaims.

OS/2 Extended Edition is also part of some firms' long-range planning.

The Extended Edition "does make sense for us because we are going to end up in two to four years with a significant amount of distributed processing and distributed data bases. And that is the way that IBM is going," U.S. West's Jennings says.

But not everyone is convinced that OS/2 or its Extended Edition is the right direction in which to go.

Sam Craig, an applied technology analyst for Monsanto Co., which is exploring distributed data base technology, remains unmoved. As he explains, OS/2 Extended Edition "doesn't mean a whole bunch to us."



## Breaking barriers

Tom Cornell of Peat, Marwick, Main & Co. forces company personal computers to work like mainframes, even though Microsoft Corp.'s MS-DOS makes this a difficult task.

Cornell is currently looking to OS/2 to break some of the MS-DOS bottlenecks and get even more processing out of his PCs.

While undecided as to his exact OS/2 course, Cornell expects to use OS/2 primarily to gain access to large amounts of addressable memory. He needs the memory to run complex simulations on a PC that formerly required mainframe computers.

Cornell, who works in Peat Marwick's airport consulting services area, already has the PC horsepower in the form of Compaq Computer Corp. Deskpro 386 computers. And the 32M-byte limit on a single hard-disk partition has been lifted with the help of MS-DOS 3.31.

To break that nagging 640K-byte random-access memory barrier, Cornell has looked at and decided against both Unix and Lotus/Intel/Microsoft Expanded Memory Specification techniques.

Although the signs are pointing clearly to OS/2, Cornell still has a few reservations. One flaw is the loss of processing speed when running in OS/2's protected mode. Part of the speed degradation is because of protected mode. Another element involves the recommendation against software developers writing directly to hardware, a popular way of boosting performance under MS-DOS.

"All of our software writes directly to the registers on the [IBM Enhanced Graphics Adapter] cards," Cornell says.

Despite these potential limitations, Cornell is leaning toward moving his software to OS/2 and the IBM and Microsoft Presentation Manager and moving forever away from the limits of MS-DOS.

DOUGLAS BARNEY

# Showdown at clone corral

## *With its PS/2 line, IBM bushwhacks competitors' price/performance advantage*

BY JAMES A. MARTIN

IBM Personal Computer compatibility. How could such a simple concept inspire so many different meanings and create so many concerns, questions and controversies?

In light of IBM's Personal System/2 announcements last April, the question is easily answered. All you need is an industry heavyweight that has lost a good chunk of its low-end market share to the persistent nibbling of clone vendors and, in response, introduced a group of redesigned personal computers.

What has caused users and compatible vendors concern is that the PS/2s are 80% IBM-made; the products boast little in the way of off-the-shelf parts that dominated the PC, PC XT and AT. End result: PC users face a new de facto standard, and compatible vendors like Compaq Computer Corp. face a difficult decision — how will they compete?

And if they do compete with these products, will users be interested? In the past, many users took advantage of the lower prices and higher performances offered by a variety of PC-compatible systems, from the most expensive Compaq models to low-cost Korean clones.

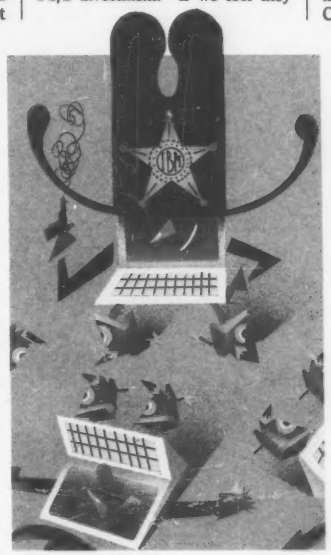
In the PS/2 Micro Channel world, however, users are still interested in price/performance advantages but are concerned about issues such as efficient mainframe connectivity as well. And even those who remain unconvinced of the Micro Channel's value may still stick with IBM's PS/2 just to be safe.

### The cost of compatibility

Creating systems compatible with the PS/2 is risky and complicated for many reasons, one being the formidable legal issues compatible vendors must consider.

After all, IBM has posted all the necessary warning signs. Anyone who trespasses on IBM territory with a 100%-compatible PS/2 clone without the Big Blue blessing will be shot on sight.

IBM's Entry Systems Division President William Lowe makes it clear that IBM intends to protect its PS/2 investment. "If we feel they have been copied, we will take action," Lowe told an American Electronics Association gathering this fall.



TERRY ALLEN

It seems clear that the first vendor to release a PS/2-compatible system without IBM approval will be sued, says Richard Shaffer, editor and publisher of "Computer Letter," a microcomputer industry newsletter based in New York. "Not many people want to take that hit," Shaffer says.

A small company with "nothing to lose and everything to gain" might make the first bold move, he adds, but only one of Compaq's size and strength would "have the funds to fight IBM's lawsuit."

IBM further complicates the compatibility picture by saying that it is not interested in licensing the Micro Channel as a whole but that it will talk to vendors on an individual basis about licensing various portions of the bus structure. Thus, IBM has successfully told potential competitors everything, yet nothing.

### Good strategy

"There's nothing illegal about keeping your competitors in the dark, and in fact, it's a good strategy," Shaffer says. He adds that it is actually in IBM's best interest to keep the competition confused.

"There's a lot of controversy around these legal issues," says Tim Bajarin, executive vice-president of Creative Strategies Research International, Inc., a Santa Clara, Calif., consulting firm. "IBM will, in the long run, license this technology, but it will require a company-by-company evaluation process; and based on the normal IBM bureaucracy, it could forestall any legal PS/2 compatibles until as late as mid-1989."

Chips and Technologies, Inc. President and Chief Executive Officer Gordon A. Campbell disagrees. He says licensing for the Micro Channel won't be a barrier. "Anyone who wants an agreement from IBM," he says, "can probably get one."

Shaffer points out, however, "It's in the interest of Chips and Technologies, Phoenix Technologies Ltd. and the rest to say PS/2 compatibles are the wave of the future. But the future may be coming a little slower than they say."

Traditionally, being first to market with a PC product is seen as being

the most direct route to leading that market.

In the PS/2-compatible market, however, no one seems overly eager to take the first dip into those icy, uncertain waters, although it is safe to say that just about every compatible vendor is busy developing its own PS/2 compatible.

Compaq has hinted that it has a Micro Channel bus structure program, despite company President Rod Canion's remarks about the PS/2 being equivalent to "New Coke."

Tandy Corp. has said it will wait for others to make the first move before launching a product.

"If there's a market need, we'll offer it," says John Patterson, Tandy's vice-president of research and development.

**Compaq has hinted that it has a Micro Channel bus structure program, despite President Rod Canion's remarks about the PS/2 being equivalent to 'New Coke.'**

A Hewlett-Packard Co. spokesman says, "We will absolutely be compatible." Zenith

Tim Bajarin

Data Systems, Wyse Technology, Dell Computer Corp. and others are said to be beyond the wait-and-see stage.

Meanwhile, Chips and Technologies and Western Digital Corp. both have promised that the chip sets necessary to build a 100% PS/2 Micro Channel compatible will be available to OEM customers by the end of 1987.

Given traditional product development time, the two companies speculate that the first true PS/2 compatibles will be introduced by the time Comdex/Spring '88 is held and that they will be shipped by next summer.

**What's compatible?**

Because of IBM's hard-line stance, there are questions as to what PS/2 compatibility will actually mean, at least in the near term.

So far, Compaq and AST Research, Inc. have introduced Intel Corp. 80386-based microcomputers with fast, proprietary bus structures designed to compete against the speed and performance of PS/2 Micro Channel models.

AST's Premium/386, for example, offers the multiple processing capabilities found in the Micro Channel but on an AT bus structure.

In essence, these machines can be viewed as the first functional PS/2 compatibles without tasking the risk of being hardware compatible.

**Toeing the line**

AST and Compaq have released the first interim solutions to the PS/2 compatible question, strategically toeing that uneasy line between similar and sued. If successful, these vendors and others could fragment the PS/2 marketplace with their alternative approaches, some observers warn.

Add-in board vendors and end users would be placed in a precarious position if that occurred.

Board vendors would be faced with developing products for different PS/2 standards, and the ongoing user dilemma of whether to buy a clone or not could be exacerbated by further choices.

"We believe we have a good shot at having a second PS/2 standard," says AST's Bob Kutnick, director of strategic projects. "But over the long term, if a vendor can provide the exact Micro Channel, that would be the preferred solution."

**Are users interested?**

Morever, the question that begs to be answered is a simple one: Are end users really that interested in the Micro Channel at this point?

According to Dataquest, Inc., some 1.2 million PS/2s were shipped worldwide in 1987, with 2.35 million expected to be shipped in 1988.

Of those figures, Dataquest predicts that, at most, only half were Models 50, 60 and 80 — those with the Micro Channel bus. The remaining half were predominantly the AT-bus Model 30s.

"Most people who are buying Micro Channel models are buying them because of IBM, not because of the Micro Channel," Shaffer says. "They bought it because IBM said it will be important in the future. Actually, most users are very confused about all this. If you stopped 100 people on the street, only about two could tell you the benefits of the Micro Channel. IBM has a lot of educating to do."

A PS/2 Micro Channel compatible could be attractive for its price as well as its availability, according to Brian Donati, senior technology analyst for the Microcomputing and Office Services at Firestone Tire & Rubber Co.

## Forecaster

### What will computer technology be like in the year 2000?

- ☑ 30 million to 100 million component/chip
- ☑ 20- to 40-million instructions per second micros
- ☑ Parallel architectures
- ☑ 3G bytes on a read-write-erase compact disk
- ☑ Fiber-optic capacity increased 10 to 100 times
- ☑ End-to-end digital phone system
- ☑ Extensive expert systems
- ☑ High optical character recognition performance
- ☑ Speaker-independent speech recognition with 10,000 to 20,000 words of continuous speech
- ☑ Good speech synthesis
- ☑ High-resolution, bit-mapped, flat screen displays
- ☑ High-performance nonimpact printing
- ☑ Research breakthroughs in wafer-scale integration, very high-level languages, optical switching
- ☑ Product developments in superconductivity, neural networks, cellular cost performance
- ☑ Prices will have declined on most technologies by 5% to 35% per year

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CW CHART: MITCHELL J. HAYES



## Forecaster

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| | 1987 | '88 | '89 | '90 | '91 | '92 |
|---|---|---|---|---|---|---|
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| Assistant corporate DP executive[2] | $66,800 | $70,474 | $74,350 | $78,439 | $82,753 | $87,304 |
| Corporate systems and programming executive[3] | $66,400 | $70,052 | $73,905 | $77,970 | $82,258 | $86,782 |
| Documentation clerk | $16,100 | $16,825 | $17,582 | $18,373 | $19,200 | $20,064 |
| Computer operator for C | $15,100 | $15,780 | $16,490 | $17,232 | $18,007 | $18,817 |
| Data entry operator | $14,600 | $15,257 | $15,944 | $16,622 | $17,412 | $18,196 |

[1] Such as vice-president of MIS
[2] Such as MIS director
[3] Such as director of systems and programming

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CW CHART: SUSAN TULLOCH

"We've had some trouble getting parts and pieces for our PS/2s, like an IBM 3270 connection card and Token-Ring cards, and compatibles in the market could help that situation," Donati says. Currently, Firestone has some 125 PS/2s, 90% of which are Model 50s and many of which are networked.

**Taking tests**

But any kind of compatible would be run through rigorous tests before any orders were made, Donati says, because of earlier connectivity problems experienced on IBM compatibles.

**Several users queried by *Computerworld* say that although they are not convinced the Micro Channel will be of any great benefit to their companies, they would rather stick with IBM on the PS/2 than risk buying a compatible.**

While admitting he does not know all the benefits of the Micro Channel, Donati says it is clear that the new bus structure would run OS/2 more efficiently than an IBM Personal Computer AT-bus micro.

"OS/2 has been our major interest in the Micro Channel models, not the Micro Channel itself," Donati adds.

Several other users queried by *Computerworld* said that although they are not convinced the Micro Channel will be of any great benefit to their companies, they would rather stick with IBM on the PS/2 than risk buying a compatible.

**But I know what I like**

"I know very little about the Micro Channel," says Richard Murphy, manager of the personal computer division of Sun-trust Banks, Inc. in Orlando, Fla.

"But I know that we prefer to stay with the IBM brand name. In connectivity situations, for example, we don't want any problems connecting a compatible to our IBM mainframe for downloading," Murphy says.

"I don't understand the bits and bytes of the Micro Channel," says Tim Hensley, director of information technologies at Clorox Corp. in Oakland, Calif., which has some 150 Model 50s.

"I do know we're getting better performance on these machines in throughput and that we are pretty committed to IBM. We look at value beyond the purchase price, and you don't want to have training, maintenance and support spread out over several vendors," he says.

# Time to send in the clones

Personal computer-compatible vendors that want to succeed in the IBM Personal System/2 market must have stronger ties with software vendors. After all, it is most likely that OS/2 Extended Edition capabilities can be duplicated in compatible software specifically for non-PS/2 micros.

"The software houses are going to have to think about compatibility themselves," says Chips and Technologies, Inc. President and Chief Executive Officer Gordon A. Campbell. "I think we'll see hardware and software vendors working more closely together than before," he adds.

"The future lies with software developers," says Neil Colvin, chairman and chief executive officer of Phoenix Technologies Ltd., which recently announced a read-only memory BIOS line of products for Micro Channel compatibility.

"The developers have the leverage of saying they won't write to this or that standard if it's not the right environment. That is the real challenge of PS/2," Colvin states.

Ultimately, according to Colvin, the micro industry needs to look beyond hardware compatibility and standards.

"We need to look at an architecture that consolidates software environments and that exploits new hardware immediately. We need to allow migration across product lines. The Unix System V operating system has so far met many of those goals, so we do know this is at least possible."

JAMES A. MARTIN

## *TRENDSETTERS*

When medium-size companies find it difficult to enforce their own protocols, pressuring vendors is the next best thing. So that's what Poloroid's Peter Duray is doing.

"We're trying to force the vendors to be more integrated sooner, much as large companies like General Motors and Boeing are doing" with Manufacturing Automation Protocol and Technical and Office Protocol, says Duray, who is the information technology manager at Polaroid Corp. in Waltham, Mass.

According to Duray, Polaroid is not a big enough company to enforce its own protocols. "But we're wise enough to tell the vendors that they need to do it for us," he adds.

Duray says Polaroid is interested in gateways between IBM and Digital Equipment Corp. "We're trying to get vendors to push the International Standards Organization's Open Systems Interconnect Model suite as quickly as possible." he adds. "We'd rather be there than in a temporary gateway solution."

Polaroid's corporate data center handles nearly all the corporation's worldwide data processing. The company runs IBM 3081 mainframes and "just about everything from DEC — Microvaxes to VAX 8800s," Duray says. The company's PCs are predominantly IBM Personal Computers and Apple Computer, Inc. Macintoshes.

In connectivity, Polaroid is on the leading edge with DEC's Decnet, IBM's Systems Network Architecture, Transmission Control Protocol/Internet Protocol and CCITT X.25 networks, Duray says.

A group of eight people work under Duray, and he says using participative management is one way to motivate them.

"Because of the nature of our work in evaluating new technologies, people have to be challenged, and they have to be independent thinkers," he stresses.

ALAN J. RYAN

## *FUTURISTS*

In the next couple of years, says William W. Marks, president of POC-It Management Services, Inc., a management consulting firm based in Santa Monica, Calif., MIS will be run more like a business within a business.

According to Marks, as the functions of information services are distributed throughout an organization, the position of chief information officer will be accepted by top-level management. The CIO will assume the responsibility of coordinating and managing information services for different departments, Marks says.

"There is a developing trend toward viewing departments using information services as clients, not users," Marks says. "These clients will require an MIS person devoted to overseeing the planning and implementation of their data processing needs. Without this account executive type, the distribution and the management of the distribution will run amok."

"As computers become more user friendly, computer crime becomes more abuser friendly," says Buck BloomBecker, director of the National Center for Computer Crime Data.

"Computer crimes are being committed by a wide range of people," BloomBecker says. "Information on committing computer crime is spreading through the typical criminal information channels, so in addition to kids who learn computing in school and employees who use computers at work, regular street criminals are learning how to commit computer crimes."

BloomBecker says increased prosecution should help curb the tide of computer crimes markedly. He explains that computer criminals have not been widely prosecuted because the law — and lawyers — have not been able to catch up with them until now. "Now that computer crime laws are in place, victims have reached the stage where they can believe in prosecution."

Equally significant in BloomBecker's mind are the civil law responses to computer crime and the growing awareness of morality in the country. "In addition to the justice system beginning to follow through on computer crime, society as a whole is becoming concerned with ethics," he maintains.

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338801-4

# What's a manager to do about PS/2 line, OS/2?

## *Companies hedge their bets with AT-class PCs*

BY ED SCANNELL

Personal computer purchases for MIS managers during the last few years have been a straightforward proposition. With IBM's Personal Computer series as the standard, the toughest decision they had to make was deciding how many PCs to buy relative to the number of compatible machines.

But when IBM introduced its semicompatible Personal System/2 family and OS/2 operating system early in 1987, life got a lot tougher for MIS managers overnight.

During the next two years, MIS managers will still be deciding how to best balance the number of IBM and compatible computers, but for entirely different reasons.

What changes the nature of this decision is that MIS managers do not fully understand how the PS/2's new bus structure and OS/2's multitasking capabilities benefit their users.

Most say they believe current industry-standard hardware running under Microsoft Corp.'s MS-DOS adequately addresses their users' needs for the foreseeable future. But with IBM halting production on its PC line and making claims that OS/2 and its applications will run better on the PS/2s than on PC AT-compatible machines, the company is putting pressure on corporations to make a choice.

Unfortunately, MIS managers will not know how much the PS/2s can help them until there are applications available that take full advantage of OS/2.

"We're committed to the Micro Channel and PS/2s but not OS/2, because we don't know what it will do for us," says Phillip Gordon, manager of office systems for Charles Schwab & Co. "I know there are places where we can use multitasking here, but it requires a heavy commitment in terms of cost."

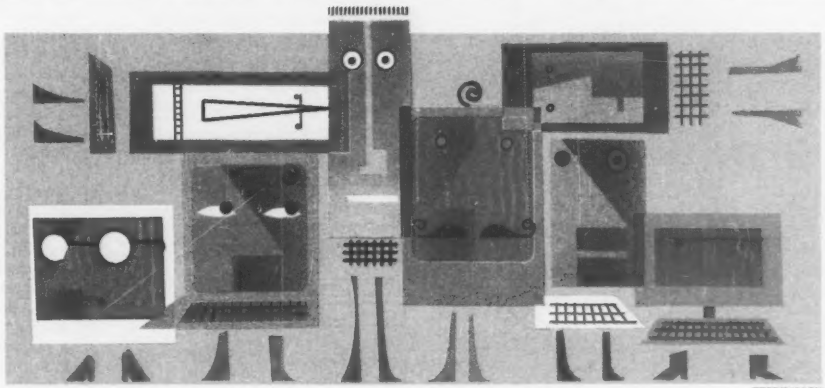
While the first applications for OS/2 Standard Edition 1.0 are expected this month — namely ports of existing programs — applications that take advantage of OS/2 Extended Edition and the Presentation Manager won't be out until late 1988.

Despite this uncertainty, many large corporations plan to buy PS/2s along with a healthy number of high-end AT-compatible systems.

These systems, equipped with either Intel Corp. 80286 and 80386 processors, Enhanced Graphics Adapter or Video Graphics Array graphics and between 20M and 40M bytes of memory, can comfortably run at least OS/2 Standard Edition. It remains unclear whether compatible machines will run OS/2 Extended Edition.

"I have a bunch of orders on my desk now for [Compaq Deskpro] 386s, 286s and a few PS/2s, just to get our feet wet," says Ron Goldfarb, manager of office automation for Pratt & Whitney's Administration Group, in summing up the feelings of many. "We are going for the power but not necessarily the PS/2s. We are waiting for the [PS/2] third-party guys to catch up."

While the "True Blue" corporations are buying PS/2s in large numbers, they are doing so more because of the system's price/performance



TERRY ALLEN

values than any long-term computing strategy. With versions of OS/2 ranging from $325 to $795 and requiring significant investments in upgrading existing hardware, even the True Bluers need concrete evidence that the PS/2-OS/2 combination gives them a quantum leap in added functionality.

**Not sold on high price**

While his firm represents an extreme example, Jeff Ehrlich, manager of product technology for General Electric Co.'s Corporate Information Technology, says it will cost $5 million to upgrade one quarter of the company's 30,000 PC users to OS/2 Extended Edition. That figure does not include the cost of OS/2 Extended Edition-specific applications and extra hardware.

"It could cost me $20 million and for what? What can I do that I couldn't do before?" Ehrlich asks. "There isn't a strong lean toward OS/2 at this point. I don't consider it something I have to worry about now." Ehrlich indicates, however, that the majority of the systems the company will buy during the next few years will be PS/2s.

Travelers Insurance Co. also plans to buy a significant number of PS/2s during the next year. However, Ron Bristol, the company's vice-president of computer science, admits he is concerned about how he can cost-effectively tie those systems in with his current base of PC ATs and XTs. Of the 13,000 systems Travelers has, many are Intel 8088-based XTs, which are not compatible with OS/2.

**Mixing old with new**

"Our biggest problem in 1988 will be blending our XTs and ATs into a mixture [of PS/2s] under OS/2. We want to maximize the use of our two operating systems — [MS-DOS and OS/2] — without costing ourselves a fortune," Bristol says.

Travelers will only give OS/2 to PS/2 users until applications are available that allow both PS/2 and AT and XT users to work together, Bristol says.

However, Bristol says he will buy more PS/2s than AT-compatible machines so as not to lock himself out of any opportunities to run the more advanced software that will be running only on the PS/2s. He said that kind of thinking got a lot of people who were working with mainframes in trouble in the past.

"You don't want to be in a situation where you are staying with the old machines. People used to think it was smart to buy second-hand mainframes, but they cost themselves money on maintenance and missed opportunities. We'll probably see that with PCs," Bristol says.

A bit surprisingly, many companies say they plan to buy 80286-based systems such as IBM's PS/2 Models 50 and 60 and Compaq Computer Corp.'s Deskpro 286 in larger numbers than they do 80386-based machines. Despite the tag — which may not be justified — that the 80286 chip is "brain-damaged," many prefer its price/performance values to those of the more powerful 80386s. Many MIS managers say they will buy a few 80386s but use them only as local-area network servers.

**'Money well spent'**

"I have told anybody who'll listen to buy a 286 machine because it's money well spent," said Mary Nelson, an information center manager at Loews Corp. "Even if you choose not to go with OS/2, you still have a machine that runs your applications faster."

While most large companies say they prefer buying new systems to get ready for OS/2 and its applications, they say they will also upgrade existing 8088- and 80286-based systems with processor and memory boards. Most think it is an appropriate alternative for the minority of their users. Some, however, think it can create problems further down the road.

"We try to stay away from that [upgrade boards], because there's always a piece of software that comes along that doesn't work, and you've got a problem," Travelers' Bristol says. "But every once in a while, you have to go buy an [AST Research] Rampage board."

**Processor boards**

Robert Core, director of strategic planning for Electronic Data Systems Corp.'s Dealer Information Division, also says he feels processor boards are not an entirely satisfactory solution for his company and probably many others from either a function or price standpoint.

"It's not just a matter of putting a faster processor in the machine, it's a matter of the peripherals being underpowered [as a result]," Core says. "You have to spend $2,000 to $2,500 for a processor [upgrade], and for that much you could buy a new system."

But processor board upgrades are becoming more popular among MIS managers, according to Rich Bader, co-general manager of Intel Corp.'s Personal Computer Enhancement Operation. At November's Comdex/Fall '87 show, Bader says several MIS managers committed to buying 1,000 of the company's processor upgrade boards such as the Inboard 386/PC. He added that many of those boards are still going to power us-

*Continued on page 52*

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HEWLETT PACKARD

*Continued from page 50*
ers and not clerical and administrative workers, who could also benefit from the increased speed and power.

"Nobody thinks of using a 386 for a word processor, but that was when word processors were like electronic typewriters," Bader says. "But now with what-you-see-is-what-you-get functions and context-sensitive Help files, you have some fairly compute-intensive uses of word processors."

**Waiting game**

With OS/2 and the Presentation Manager to be delivered before the end of the year, few MIS managers plan to buy significant numbers of Intel 8086- or 8088-based systems next year. While some will upgrade the 8088s and 8086s they have, many more say they will relegate those machines to low-level tasks.

However, some MIS managers admit they are buying so many 80286- and 80386-based systems that they cannot find uses for their 8088s fast enough. Some say they are now beginning to stockpile a growing number of them. While they would like to sell them or give them away, MIS managers point out that the book value on these systems is higher than the street price, which means they would sustain a big write-off.

"It's a financial problem for some companies," GE's Ehrlich says. "We can't do anything with them, but we can't afford to give them away."

A few companies say they would minimize the uncertainty and general aggravation imposed by the PS/2s and their multitasking operating system by buying more Apple Computer, Inc. Macintoshes.

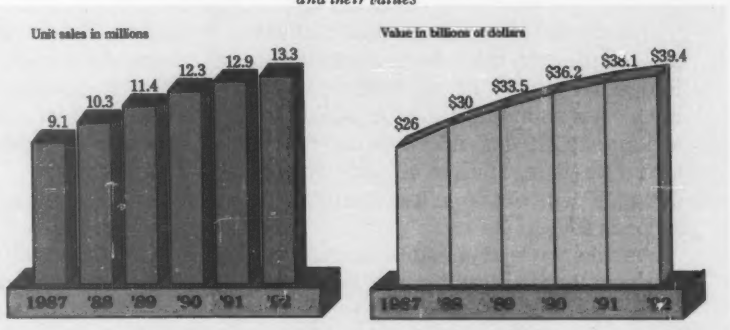
The Macintosh has a graphical interface and a multitasking operating system that's virtually invisible to users — although not quite as feature-rich as OS/2. The Mac also has generally superior applications compared with the MS-DOS-compatible applications that are available today.

"What some people do on the PC is juvenile compared to what you can do on the Mac," GE's Ehrlich says. Some PC users "haven't seen the kind of software that's available on the Mac."

## Forecaster

**How many PCs, and what will they cost?**

*A six-year projection of U.S. personal computer sales and their values*

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## *TRENDSETTERS*

In 1981, when Brian Camenker was considering changing his brand of microcomputer, he joined the IBM PC Users Group of the Boston Computer Society to assist him in making his decision.

At the time, Camenker was an Apple Computer, Inc. Apple II Plus software programming consultant. But "when the PC first came out," he explains, "I wanted to find out whether or not I should get one. I went to the meetings to see if the IBM PC was worthwhile and decided it was."

Camenker, who is now the users group's director, says he has watched the group grow from a few hundred users to its current size of 15,000 members.

Users groups, Camenker says, play an increasingly important role in the industry. Vendors realize the importance of users groups and listen to their ideas. "Big vendors often ask us what we think," he says.

And Camenker, through various posts he has held in the users group, tells them. As he jokingly recalls, "I was able to tell Bill Gates that if they don't improve DOS, a clone will take over his marketplace."

In addition to his duties with the users group, Camenker, 34, holds down a full-time job as a senior systems analyst at Dynamics Research Corp.'s Andover, Mass., division headquarters. He is the top-ranking PC expert at Dynamics Research.

In the users group, Camenker stresses education. "We do the best we can to help users of PCs. We help new users learn about PCs and also help experienced users learn how to use the PC more effectively. But we also show people that there are some things PCs aren't good for."

In 1982, while the rest of corporate America was keeping IBM in designer-label pinstripe suits, Dick Webb was investigating Apple Computer, Inc. Macintosh specifications for Peat, Marwick, Main & Co. auditors.

The partner in charge of audit technology at Peat Marwick's executive offices in Montvale, N.J., says he chose the Apple micro for its ease of use when it became available in 1984.

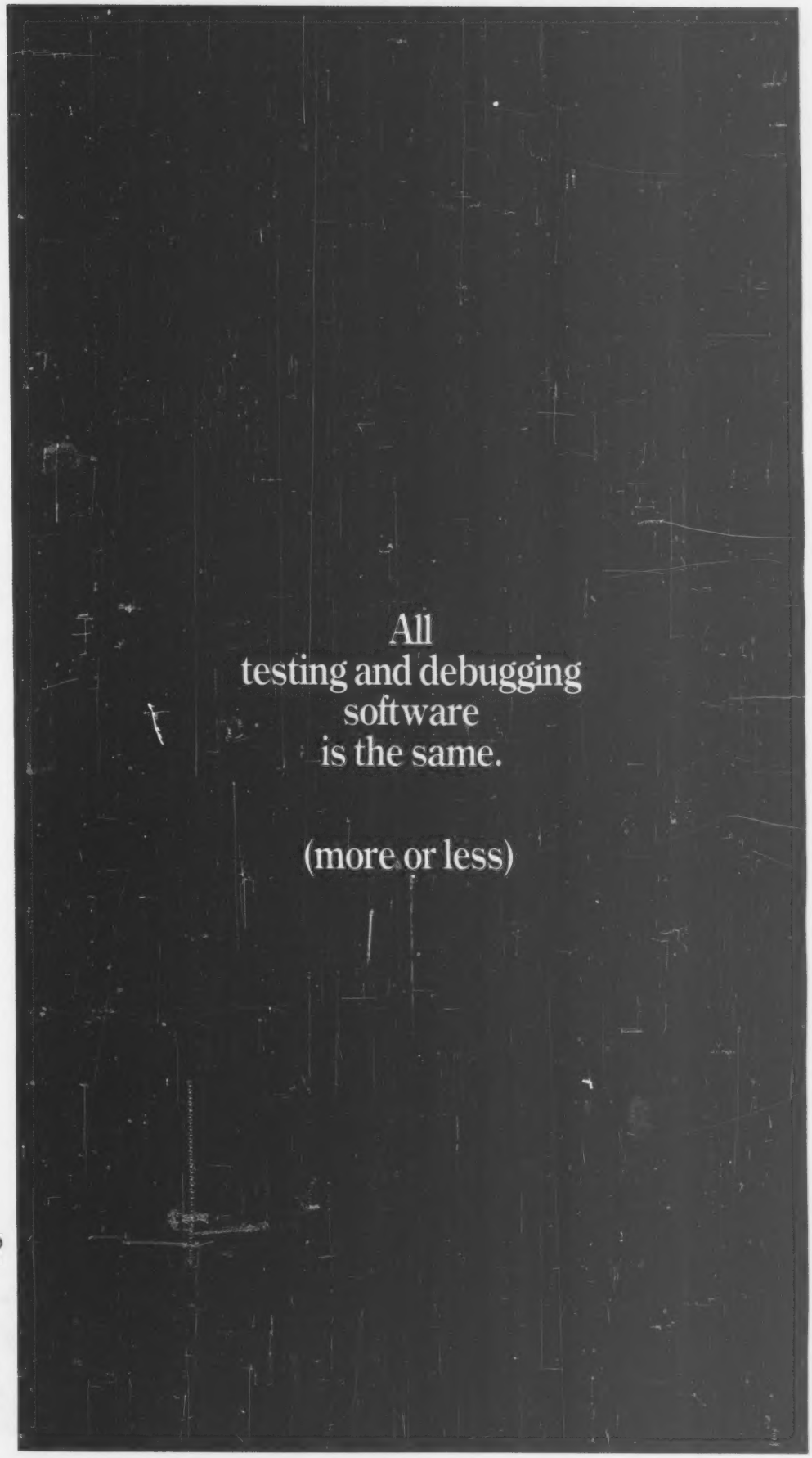
Today, he says, "It's nice to know that the rest of the world thinks the graphics interface is the way to go."

Peat Marwick has invested in some 8,000 Macintoshes worldwide, with approximately 5,500 in use in the U.S.

During the last 12 months alone, Webb has approved the purchase of an additional 2,000 units, bringing the average ratio of auditors to machines to 1-to-6. He says he hopes to eventually have a Macintosh assigned to each new auditor when the employee walks in the door.

Webb says the computers

*Continued on page 54*

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*Continued from page 52*
were originally purchased to help auditors with clerical, nonjudgmental-type tasks. But the Macs are being used in meatier applications now.

Using the Apple products gives his firm an edge over the competition, he says.

"I think virtually all the other Big Eight accounting firms are using [IBM and compatible] personal computers," Webb says. "We think the Mac is providing us with an advantage, because it's easier for our people to use, and training time is significantly less."

Backing up claims that his auditors are proficient in many applications, Webb cites a recent study that Apple commissioned, which shows that the average IBM Personal Computer and compatible user uses his computer for about 30 minutes daily and is proficient in two applications. The average Mac user, the study shows, uses that unit for 2½ hours per day and is proficient in six applications.

To keep up with the latest trends in computing, Webb's office frequently acts as a beta-test site for new Apple products. And to keep up with the latest trends in auditing, each year Webb brings in 10 to 15 auditors — for a period of 15 to 18 months — to help develop customized software.

The program has proven very successful since its inception in 1981. "We can say to people, 'Better be sure you're doing it right, because you're the one who's going to be using it.' "

ALAN J. RYAN

Self-reliance has become a necessary choice of the new generation of personal computer users at Pepsico, Inc.

Elizabeth Menten, information center manager at Pepsico's Purchase, N.Y., corporate headquarters, says one of her main goals is working to support self-reliance among PC users at her firm. "We're training them to help themselves," she says.

While the number of hours Menten and her staff devote to user support has remained steady, the need for support has grown as the company's workstation penetration has surpassed 60%. "We can't get any more staff," she says, "so users have to support themselves more and more."

**'Their own leaders'**

Menten says this attitude also applies to her six-member information center staff, with each member assigned to a particular area of expertise, such as electronic mail or local-area networks. "They are their own leaders. I give them direction, but they have to recognize that this [job responsibility] is their tool and their opportunity," Menten explains.

A former consultant at the Gartner Group, Inc., Menten says she has found that the users she had been writing about as a consultant are just as hungry for technology as she had imagined.

To keep up with the sophisticated audience, Menten devotes much of her time to evaluating what she calls "hot" technologies.

Some areas she currently is investigating include executive information systems and desktop publishing.

Pepsico also keeps on top of technology by acting as a beta-test site for some software products. Beta testing, Menten says, "gives us the opportunity to find out what advantages there are to a product and what potential problems there are."

Pepsico is primarily an IBM shop, Menten says, with an IBM 3081 mainframe, a System/36 minicomputer, Personal Computers, PC XTs and ATs and Personal System/2 Model 50s, 60s and 80s.

## *Microscope*

Joseph Vincent follows a participative management style: "I believe you should use all the brains you have and all you can borrow. I want the professional opinion of those working for me; I don't want them to just echo me."

As director of computer performance and capacity planning, Vincent helps keep mammoth health organization Humana, Inc. on top of the latest technology.

He and his staff work out of the company's block-long secure data center in Louisville, Ky., where they assess new technologies and make purchase recommendations in addition to ensuring that the company's existing equipment works correctly.

The data center currently houses an IBM 3090 Model 600E and an IBM 3084 Model QX. The mainframes are part of a network that includes various types of minicomputers at each of the 80-plus Humana-owned and -operated hospitals nationwide. Information is sent to Louisville during off-hours via leased lines.

Vincent, who has 27 years of MIS experience, got his start in the military and has seen the inside of both government and private-sector shops. "In general, one MIS shop is pretty much like another," he maintains. "The challenge is to understand the business and how to apply technology to the business."

While Vincent makes purchase recommendations, upper management makes the ultimate decisions. "I do my homework, so my recommendations are based on sound analysis," he says. "I'm fortunate that the people I work for know that I know what I'm doing and take my recommendations at face value."

Currently under Vincent's evaluation is the Teradata Corp. DBC 1012 computer, a data base machine that contains disks and software and could prove useful in managing the 600,000 member names in the Humana health insurance program.

"The MIS department here isn't fighting PCs," says Thomas O'Leary Jr. "We're leading the charge and always have been."

O'Leary is director of MIS technology at North American Philips Corp., a $4.5 billion manufacturing company that is run primarily on IBM equipment, from 3090s to Personal Computers. At the company's headquarters in New York, there is nearly a 1-1 ratio of personal computers to the more than 400 employees.

For the past two years, O'Leary has been buying microcomputers based on Intel Corp.'s 80286 microprocessor. But now, he says, he is looking hard at IBM's Personal System/2. "We've been waiting for third parties to come up with boards for things we use on the PC AT, like Irma cards, on the PS/2," he says. "As those things become available, we'll probably start getting more PS/2s."

But, O'Leary concedes, micro buying decisions are becoming more difficult. "The user has the best of all worlds now; he really can't make a bad decision. With a three-year life cycle, the user will get his money's worth out of . . . a 286," he says. "But we can also say that in the same period, how much more use could he get out of the [Intel 80386]?"

And then there is Apple Computer, Inc.'s Macintosh personal computer.

"The Mac is finally on its way into corporate America. We're about ready to bless it. Connectivity is the single issue, and it is the thing that kept the Mac out of here."

ALAN J. RYAN

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# Flexible PC plans best, not grand designs

## *Users favor building-block strategies*

TERRY ALLEN

BY STEPHEN JONES

Those innocuous little boxes that were once the menace of MIS have managed to nuzzle their way into the hearts of corporate America.

But guiding an MIS shop down a path lined with microcomputers is no easy task. It means dismantling old mainframe-dominated strategies, roping in technologies that consistently buck standardization and finding enough money to glue an integrated system together.

Most MIS executives have taken a proactive role in embracing the microcomputer, but such issues have made the union a loose one. Instead of relying on the five- and 10-year plans that have formed the basis of traditional centralized mainframe strategies, today's executives are focusing on a generic set of rules.

Companies such as General Electric Co. and Bank America Corp. are following game plans that are flexible enough to ride the changing tides of the micro industry but rigid enough to provide uniformity throughout the corporation.

"You have to avoid the trap of a big, grand design for MIS," says John Konvalinka, managing partner and chief information officer with Arthur Andersen & Co. in Chicago. "We're implementing our [micro] plan in an evolutionary sense, like a series of building blocks."

For American business, the building blocks are piling up fast. MIS is gobbling up micros at breakneck speed, while mainframe acquisitions plod considerably behind.

Market research firm International Data Corp. (IDC) reports that U.S. shipments of personal computers have soared from $1.9 billion in 1981 to $16 billion in 1987. Mainframe deliveries, on the other hand, have grown by about $5 billion in the same period, from approximately $4 billion to $9 billion. By 1991, micro shipments are expected to jump to $22.2 billion while mainframes barely climb to $10 billion.

In 1987 alone, IDC estimates, MIS spent in excess of 50% more on micros than it did on mainframes.

Shelling out that kind of money requires some dramatic changes at a number of corporate levels.

At San Francisco-based Bank America, micro acquisition has become such a focal point for MIS that purchases for end users are now a line item in the bank's systems investment budget. Phil Newbold, vice-president of business support systems, says the budget changes were the result of the firm's decision to increase micro spending by 400% over the next three years.

Increased funds are needed for both the purchase and implementation of a fully integrated data processing environment, with the brass ring being a seamless path from high-powered PCs to the host. Mark Tebbe, who advises corporations on micro strategies as president of Chicago-based Lante Corp., estimates that a switch to consolidated computing can increase micro-related expenditures by as much as 50%.

"People are looking at the big picture — how the PC can fit into their overall corporate goals, and that is going to cost some money," Tebbe says.

Armed with a fistful of cash, MIS managers are grappling with the details of integration. Strategies vary according to a company's particular business, its existing MIS configuration and the attitude of resident systems gurus.

While some companies are relying on minicomputers as the go-between from the desktop to the mainframe, a cadre is lining up behind local-area networks.

For companies like Mutual Benefit Life Insurance Co. in Newark, N.J., LANs are a welcome alternative to a current system of simple emulation through IBM 3270 terminals. By installing a LAN, Mutual Benefit expects to create true cooperative processing between its host and micros while linking up a string of disparate hardware in the process.

More important, however, is the

need to catch a new wave in MIS that is expected to build with IBM's OS/2 Extended Edition and Systems Application Architecture, says Mary Alice Johnson, information center manager at Mutual Benefit. LANs are expected to play a big role in the implementation of those products. "As a company, you have to put yourself in the best position to take advantage of what is coming down the road tomorrow," Johnson says. Mutual Benefit plans to move on to IBM Token-Ring LANs if a pilot program is successful.

A LAN's ability to load and retrieve data from the mainframe does not guarantee the efficient use of that information, though. Companies have realized that they have a slew of data bases containing unknown, incorrect and redundant data. "Companies have a lot of data but not much real information, because they don't know what it means," Tebbe says.

**Companies have a lot of data but not much real information, because they don't know what it means.**

MARK TEBBE
Lante Corp.

Bankamerica got around the problem by going through the arduous task of breaking down and sifting through mainframe data that had been stored in compartmentalized chunks. After 2½ years of analyzing systems records, the bank has established the "corporate data store," a body of data that has been assembled, unified and documented for access by end users.

While data base information can be tapped by a user with a PC, it will be several years before the data store is completed, says Arnold Birenbaum, vice-president of end-user computing at Bankamerica. Companies are using that kind of downloaded information for everything from simple spreadsheet number crunching to application development on PC workhorses.

Of the 9,000 workstations connected to the host at The Travelers Corp. in Hartford, Conn., about 1,600 are used for application programming. Developers use PC-based development tools to write applications code that is uploaded to the mainframe, according to Bob Fredette, who runs the company's computing resource center.

But putting such development power in the hands of the masses can lead to problems if it is not done under the watchful eye of MIS, executives say. San Francisco-based Wells Fargo & Co. follows a strategy aimed at maintaining a degree of consolidation in each of its divisions while pumping more power and flexibility onto an end user's desk top.

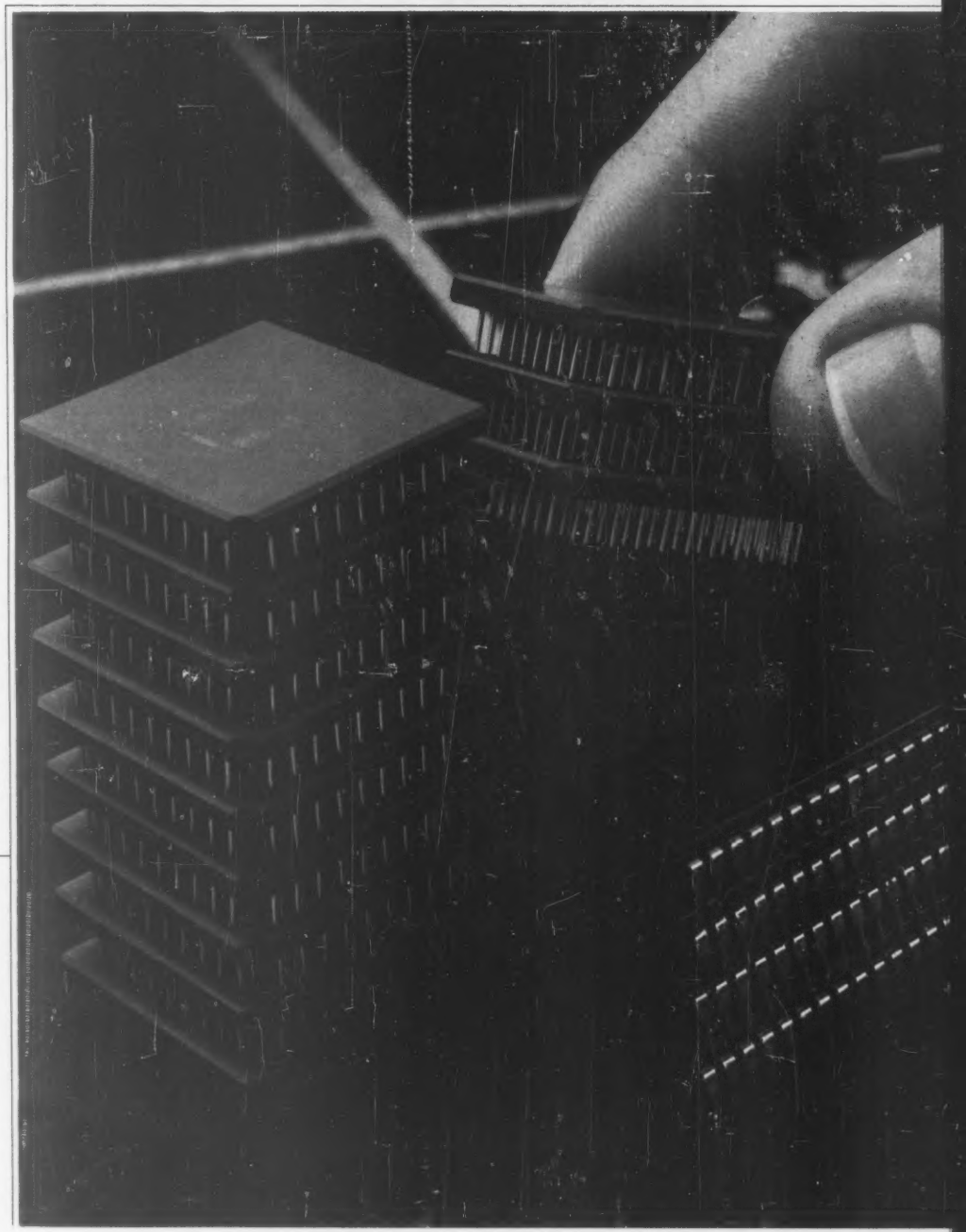
"You need a strategy to control growth and make sure access to certain applications is not dependent on an individual. The application can become useless if that person leaves the company," warns C. James Saavedra, senior vice-president and manager of Wells Fargo's wholesale loan services division.

Despite the flurry of interest in micros, some organizations have found that their rank and file users are still wary of jumping on the PC bandwagon.

That forces MIS to market its wares to corporate users. Last year at Arthur Andersen, MIS set up a mock information center running every piece of equipment around which the company had standardized its integration plan. The center, which features everything from Wang Laboratories, Inc. and Zenith Data Systems laptops to an IBM mainframe, was so successful in winning over skeptical users that the company has made it a permanent display and training center.

Such efforts are admirable, but MIS has a long way to go before seamless integration exists. In fact, most managers agree that the dust being kicked up by today's loosely defined micro strategies shows no signs of settling soon. "There's as much confusion as ever," says Bob Hilton, a consultant at Systems Planning Institute, Inc. in Atlanta.

But if MIS continues to chip away at the problems inherent with any strategy for linking micros to mainframes, that confusion could yield some calming results.



## *FUTURISTS*

OS/2, IBM's Systems Application Architecture (SAA) and end users are going to make 1988 an interesting year for software developers, says John P. Imlay Jr., chairman and chief executive officer of Atlanta-based Management Science America, Inc.

"The sale of personal computers is dramatic right now," Imlay says. "OS/2 opens the door for software innovation, and it will be interesting to see how people take advantage of it," he adds, referring to the operating system jointly developed by IBM and Microsoft Corp.

Imlay says that when products come out that run under the new operating system, "We should see multitasking and all those other things IBM promised. We'll have the chance to find out the true potential of the Personal System/2." In addition, Imlay says, the lack of a standard in fourth-generation languages inhibits improvements in productivity.

SAA illustrates some of the problems involved in standardization in the industry, he says. "Many independent developers have fourth-generation languages and productivity tools now, and they show significant improvement in programming time over standard Cobol programming, but there's no standard.

"Then IBM comes along, waving SAA, claiming it is going to standardize everyone. Can they pull it off? Can they come out with quality, competitive products worthy of becoming a standard? And if they do, will the independent industry accept it? These are big question marks to watch in the future," he says.

Finally, Imlay says, 1988 will be a year of end-user, rather than data processing, tools.

"The challenge for the developer in 1988 will be making software simple," he says. "The end user should be able to do his own inquiries, his own screen building, his own screen painting. The end user should start getting what he needs."

When Mary-Ellen Quintana tracks trends among today's working women, she doesn't always like what she sees in the computer industry.

Lately, says Quintana, a member of the executive committee of the New York City Chapter of the Association of Women in Computing, the approximately 250 chapter members have been voicing concern about the lack of career growth opportunities for women.

"Women working within corporations find they follow a career path only so far before they hit their heads on a glass ceiling," Quintana claims. "It's not something you can see, but sooner or later, you bump up against it."

As a result, Quintana says, more women are looking for alternatives. "In the next few years, we are going to see brilliant and capable women — frustrated by that glass ceiling — strike out on their own. They will explore such options as consulting, entrepreneurial ventures and not-for-profit organizations," she says.

Another area of concern, Quintana adds, is the tendency to label programming as "woman's work." She finds that a programmer's job is assuming the role that the stenographers' pool of the '80s held in the past.

"Women turn to programming to get a foot in the door," Quintana explains. "Once inside, they discover that not only is the route up the career path slow and tedious but, because of the number of available programmers, the pay scales are decreasing as well.

"Unfortunately, this trend will continue until women are encouraged to pursue other areas in the industry, such as those involving hardware and planning," she adds.

Quintana asserts, however, that as qualified women leave corporations, employers will realize their loss. And, she adds, "in time, we hope policies will change and that more and more women will get through that ceiling."

Will you have less computing power in 1988? Probably not, says Bruno Bassi, publisher of "Computer Economic Report," a monthly newsletter. Although Bassi senses concern among computer users about the current downward trend of the economy, he says he is optimistic about 1988's computer spending.

"There are two possible responses we will see," Bassi says. First, he suggests, the economic downturn could induce capital spending cuts that would include the purchase of computer systems. The second response, however, relies on the well-entrenched theory that data processing investments are a way to cut costs in the long term.

Bassi predicts the second scenario. "The economy is not going to adversely affect the users in the computer industry," he says, "both because of the industry's competitive position and because of the cost-saving nature of a data processing investment."

SUZANNE WEIXEL

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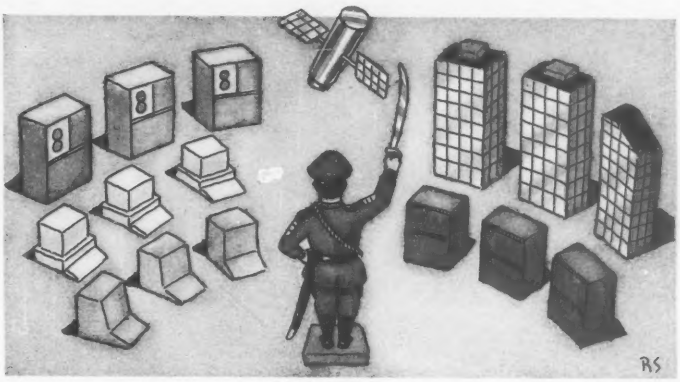
# Net management war

## *To the users go the spoils of easy control*




ROB SAUNDERS

BY ELISABETH HORWITT

The rival camps are forming. Opposing standards are being raised. Prepare yourself — The Great Network Management War is about to begin.

The outcome of the battle will determine which vendor protocols will form the basis of the new industry standard — and, more importantly, whose products will act as controllers for everyone else's networking equipment.

Who will benefit from such a confrontation? The users, who will be left some hefty spoils: the ability to monitor, control and configure multivendor networks from a central vantage point.

"We do want to have one console where all the network statistics show up, but so far there is no one package to do it and no vendor that wants to," says Harry Regis, vice-president of systems and network engineering at Merrill Lynch & Co.

"The challenge in the next few years is to integrate the islands of different vendors' network management systems," says Dixon Doll, chairman of Ann Arbor, Mich.-based consulting firm DMW Group, Inc.

In the last couple of years, and particularly in the last six months, vendors have promised to link up to their competitors' systems either on a case-by-case basis, through joint development agreements or through common protocols such as IBM's Netview or the Open Systems Interconnect (OSI) standard.

Users still have doubts, however, that vendors will rally around a single standard, particularly if it means dispensing with their own proprietary value-added features. "It would be great if vendors agreed on a standard way to do alerts and diagnostics, but they want to keep their customers with proprietary code," Regis says.

IBM and AT&T, he continues, have "what they call integrated network management," but neither provides a way to reconfigure T1 networks or monitor bandwidth smaller than the 1.5M bit/sec. T1 rate. "That's what we need," he says.

Vendors such as IBM, Digital Equipment Corp., Hewlett-Packard Co., AT&T, Timeplex, Inc., Digital Communications Associates, Inc. (DCA), Codex, Inc. and Avanti Communications Corp. have all said they would support the OSI standard when it matures sometime in the next two to three years.

If it is able to live up to its promise, OSI will provide uniform ways for different systems to exchange, collect and store information and, at the same time, will leave room for vendors to provide value-added features that are geared toward their particular set of equipment.

Thus, a mature OSI standard would free users from having to funnel network management information through one type of node and vendors from having to rewrite their software for each type of equipment they wanted to hook into.

That is the OSI ideal; the question that the next year or two should resolve is whether some major player will usurp the standard's role before it has a chance to mature. "While standards groups are trying to develop the perfect product, blemished products from AT&T, IBM, DEC and others will be making steady inroads," cautions William H. Maybaum, vice-president of the DMW Group.

Industry sources say Netview is currently the most viable candidate for a de facto network management standard.

Of 107 IBM Systems Network Architecture (SNA) sites polled recently by market research firm International Data Corp., 70.1% said they were confident that Netview would be established as a de facto standard.

No other major system vendor has come up with a competitive offering that is based, as Netview is, on existing widely installed products. More than 83% of IBM mainframe sites that use network management

software have installed one or more components of Netview, according to a recent survey by West Hartford, Conn.-based research firm Focus Research, Inc.

More than 25 vendors have pledged to send network data to Netview via IBM's Netview/PC interface. And IBM shops are pressuring those users who have not already hooked up with Netview, according to Maybaum. One such company is Westinghouse Electric Corp., which currently has an extensive IBM computer installation linked by T1 switches from Infotron Corp. and General Datacomm, Inc. and modems from Racal-Vadic and AT&T.

Currently, the manufacturer uses each vendor's management system to troubleshoot problems on its own equipment, according to Westinghouse's manager of computing and communications, W. Edward Hodgson.

Westinghouse would like to manage its T1 equipment through Netview but has been waiting for IBM to first deliver certain enhancements to the product. "All of the communications equipment would have to interface with Netview through Netview/PC, which provides monitoring and data collection" but not the means for correlating the data and making decisions, Hodgson notes. The company will probably wind up writing its own applications using IBM C-lists and an artificial intelligence shell from Gold Hill Computers, Inc., he says.

AT&T and DEC have announced plans to make documentation for their own architectures available to vendors that want to link up to their systems — just as IBM has done.

### Catching the hare

AT&T and DEC may, however, have a hard time catching up with Netview's lead. "AT&T's critical problem is crossing its own product lines for comprehensive network management," Maybaum notes. "Add multivendor management and the problem gets worse." Maybaum also questions whether AT&T can generate support for Unified Network Management Architecture, given that a lot of vendors have already committed to IBM's Netview and do not have unlimited software budgets.

AT&T has been using OSI compatibility as a rallying cry to bring in vendor support to UNMA. According to Judith Brinsfield, department head of unified network management for AT&T/Bell Laboratories, the vendor incorporates OSI protocols into its system whenever possible and makes the documentation available to other vendors and to the International Standards Organization to accelerate OSI development.

DEC has not yet officially announced its comprehensive network management architecture. However, it is planning an "all-out promotional campaign for a comprehensive product that will compete with Netview" in its ability to manage both data and voice systems, according to DMW Group's Doll.

One likely scenario for the next few years is for DEC, AT&T and IBM to go to war over whose network management architecture will become the de facto standard.

### Winner take all

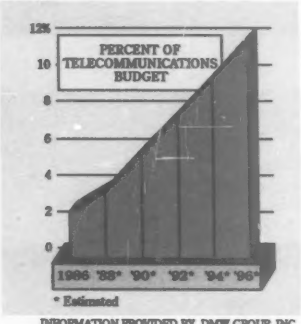
Whichever system wins would become the focal point to which other vendors' equipment would send network management data. This would give tremendous power to the vendor, particularly if it is IBM, since others would have to implement its management and communications protocols in their systems.

Industry sources predict that Netview will become a de facto standard but that users will insist on a choice of solutions.

"The extent of the demand for centralized multivendor network management depends on whom you talk to," says Barry Gilbert, executive vice-president of Marlboro, Mass.-based research firm Market Information Center, Inc. "If a lot of your gear is from Codex, you rely on Codex, not the Netview end."

"We use [DCA subsidiary] Cohesive's network management for our Cohesive T1 network; for our IBM system, we use [Netview components] NCCF and NPDA," reports Eric McCafferty, director of technical services for Community

## Growth of network management and control budget

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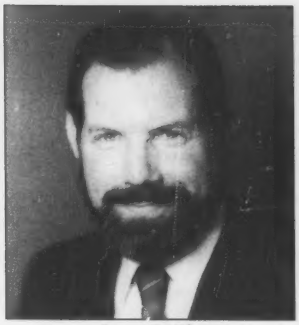
Leon Smith

Mutual Insurance Co. in Cincinnati. "Integrating different network segments would be nice, but at this time, I see little useful information gathered by Netview or by anyone else's offering. Each vendor reports real well on their own products but offers very generic reports on other vendors' equipment." McCafferty's complaint should be addressed in the next year or two as IBM and its growing band of Netview supporters write Netview applications to control and monitor multivendor networks.

But corporate users may not buy into IBM's scenario of managing the whole network from the SNA side. "We can't justify spending the dollars and resources to pull together the four PCs and software packages we have now into one centralized system," McCafferty says.

Several firms say they prefer to maintain separate management systems for DEC and IBM installations.

"Of course, the ideal would be to have the universe accessible from one terminal, but we have found that DEC and IBM packages are best for managing their own environments," says Leon Smith, a vice-president at Bankers Trust Co. "We have Decnet, SNA and X.25, and no one product allows you to manage all three." Will international standards help? "There's a lot of 'not here yet, can't say.' "

# Integration case by case

Concluding that many users are unwilling to wait for IBM's Netview or the Open Systems Interconnect standard to mature, networking vendors are pursuing multivendor network management on a case-by-case basis.

How do they accomplish this? Oftentimes by forming alliances with companies whose products complement their own.

The idea, according to Chuck Halquist, director of marketing for Avanti Communications Corp., is to meet the needs of network managers "whose centers look like war rooms and who would really like one network management terminal to look at, not 10."

Such alliances are designed to provide network management across a broader range of products than one vendor can provide alone.

One common relationship of this type involves a computer vendor and a networking firm, such as Digital Equipment Corp. and Northern Telecom Corp.; Hewlett-Packard Co. and Timeplex, Inc. (this alliance may be broken off if Timeplex is acquired by HP's rival, Unisys Corp.); and IBM and Network Equipment Technologies Corp.

Vendors with complementary networking products may also agree to mesh management systems. Almost as soon as Digital Communications Associates, Inc. (DCA) acquired T1 vendor Cohesive Network Corp., the two companies began integrating their respective network management offerings.

DCA is working on a similar project with Racal-Milgo. And both Avanti and Timeplex have indicated that they will work with other vendors that want to link with their systems.

"We don't want to reinvent the wheel," Avanti's Halquist says. "We're saying if someone happens to have a Paradyne system, they can use windows on our Sun Microsystems workstation to access it."

So far, none of the above alliances has borne any commercial fruit, but 1988 may be the year we see this happen.

**Centralized system**

Meanwhile, Avant-Garde Computing, Inc. offers a way for users to provide centralized monitoring of a number of different network management systems, including Netview. Avant-Garde's product, Netcommand, supports a variety of terminal modes, allowing the user to call up views of various network monitoring systems as different windows on the monitor, the vendor claimed.

Netcommand also has a filtering and prioritizing facility that can be customized to screen out all but the most relevant network alert information, according to Roger Greene, Avant-Garde's director of communications.

Users may still have several different network management systems, each designed for a different brand of equipment — but at least they "don't have to rush from one terminal to another to keep track of everything," Greene says.

ELISABETH HORWITT

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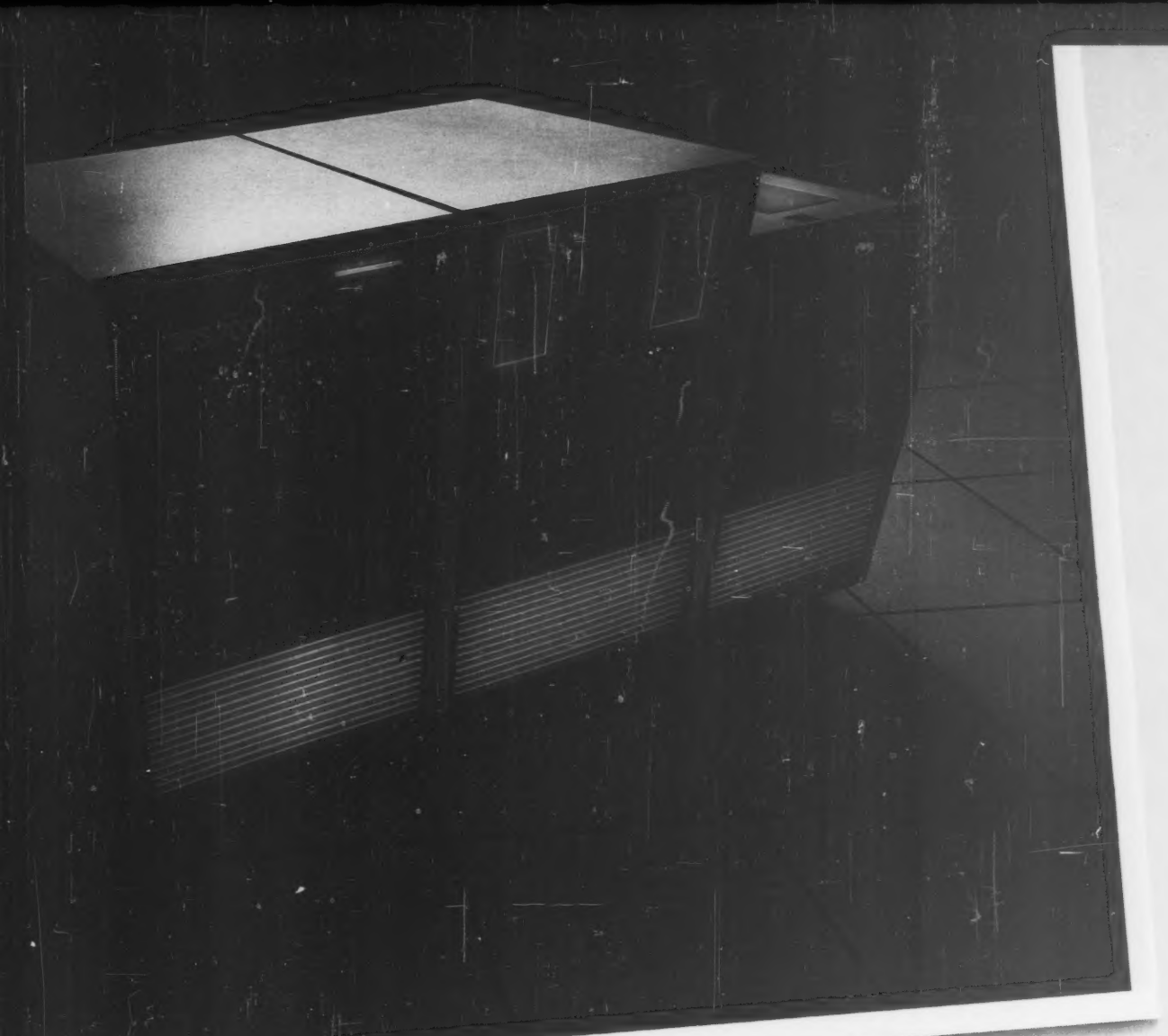

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# Net managers untangle wiring knots

## *With luck, '88 will be the year vaporware dies*

ROB SAUNDERS

BY PATRICIA KEEFE

It has been a long, lonely haul these past two years for many network managers, suddenly thrust as they were onto the hot seat as corporations struggled to communicate.

After hacking their way through a jungle of competing wiring and connectivity schemes in 1986, many network managers stumbled through pilot projects in 1987, reaping at last solid ideas about their corporate networking needs.

Much to the dismay of those users, some eagerly clutching communications shopping lists, too many vendors managed to sail through 1987 on a cloud of vaporware, raining too many promises and not enough substance. If that were not bad enough, users today face major shifts in technology at the microcomputer and mid-range levels that threaten, at the very least, to skew many a well-plotted connectivity blueprint.

The year was no piece of cake, but 1988 will be different. After working like dogs in the dark for the last two years, network administrators have made their decisions, drawn up game plans and fattened their budgets.

### Looking for substance

Nineteen eighty-eight will be a building year for network installations, be they ground-up revamps or expansions of existing implementations. Clearly, MIS is looking for substance, and it will vote with its dollars. New and experienced users are expected to turn up the heat on network suppliers, which will be expected to put up or be shut out of corporate network strategies.

"I think you'll see many organizations press the vapor issue with a lot of suppliers, because they are under pressure to make some decisions," says a network manager in a large New York-based financial organization. Following a successful token-ring pilot, he plans to expand the number of token-rings within the firm.

Still, it can be hard to get vendors to react, warns a senior network project manager for one of the largest insurance companies in the world. Primarily an IBM shop, it hopes to link Big Blue to an infiltration of Digital Equipment Corp. and Wang Laboratories, Inc. equipment. "We had a major problem getting vendors to move off the fence with respect to [interconnectivity] — even IBM, and we're an IBM shop. We literally had to drag them into the ball game," he recalls. As a result, this user feels trapped in the pilot mode. "We don't feel comfortable in saying 'This is a fully deployed system,' " he says.

Still other users say they are tired of hearing about grandiose networking schemes, be they proprietary "open" network architectures, Integrated Services Digital Network or Open Systems Interconnect (OSI).

"The vendors are all big on making announcements, but when it comes down to a concrete resolution to existing problems, they can't deliver," the insurance network manager complains. "They all want to sell you a box to hang off the system somewhere, but no one is giving you a true solution to your problems."

The specific problems he is referring to often involve the down-and-dirty details of communications; such mundane matters as security, administration, applications and, more and more, network integration.

### Integrating networks

A significant segment of network users have already shifted their focus beyond the islands of work group networks. Their top priorities in 1988 are the integration of heterogeneous networks and network management — the more automated the better (see story page 61).

"The vast majority of networks today are in their own little world. Tying them into the mainstream of the corporate network will be a major MIS issue in 1988," says Thomas White, president of Infonetics, Inc., a Santa Clara, Calif.-based consulting firm.

Fortune 1,000 companies have,

on average, 13 separate wide-area networks and hundreds of remote local-area networks, according to Forrester Research, Inc., a market research firm in Cambridge, Mass.

Houston-based M. W. Kellogg Co.'s 1988 networking plans include tying more LANs and devices to the corporate backbone, says David Lee, information center manager. M. W. Kellogg has an IBM mainframe attached to DEC Vax-clusters. An Ethernet backbone links terminals and a printer together. "We're heavily into DEC," Lee says. Even so, file sharing between IBM Personal Computers and the VAX and between PCs and mainframes is becoming more and more an issue.

The drive toward network integration has not escaped the vendor community, particularly at the low end. For example, a key concern reflected in many of the mergers that have swept the communications industry during the last 12 months is interconnectivity, be it integrating dissimilar stand-alone work group LANs, tying local and remote sites into a backbone or linking LANs to hosts.

**Encouraging words**

Another encouraging note is that many vendors are readying mature versions of current gateway products. "A lot of the gateways [available in 1987] were 'rough and ready,' and it took a lot of tinkering to make them work," says David Terrie, president of Scituate, Mass.-based Newport Consulting. "Vendors and users worked out a lot of bugs in the last year, and so we'll see much more solid products next year."

Beyond the basic physical connection, network managers are also concerned with sending data back and forth between dissimilar mail and office automation systems. The goal is to provide a clear path to corporate data.

At companies like M. W. Kellogg, file sharing and peer-to-peer relationships will become an area of focus in 1988.

It is critical that this capability not require a massive reworking of users' existing communications and systems investments. "Being able to leverage [our installed mixed-vendor base] would probably be a major issue," says John Prusinski, a telecom manager at First National Bank of Chicago, who wants to integrate data from a half-dozen token-ring networks and several AT&T Starlans with the bank's private branch exchange.

Prusinski says he wants to be able to monitor an integrated voice/data network with one system. "It would be of tremendous help if we could get IBM and AT&T to work together," he says.

**TCP/IP interconnectivity**

Possibly the hottest area in network integration is Transmission Control Protocol/Internet Protocol (TCP/IP), a Unix-based government standard for interconnectivity able to link incompatible systems together. The year was punctuated by announcements of support from vendors racing to embrace the protocol suite.

Clearly, 1987 was a heady year for TCP/IP. Spurred by user demand and a vocal group of TCP/IP suppliers, even IBM and DEC were forced to announce grudging support for the protocol.

TCP/IP first picked up steam earlier in the year, as vendors sought to provide restless users with an interim solution pending the outcome of discussions concerning that layer of the OSI model. But as it became clear that the ISO's resolution of that issue might be three to five

## *TRENDSETTERS*

When Texaco, Inc. became interested in using the "giant brain" called a computer back in 1955, J. Leslie Hodges was one of the people chosen to review the technology.

Hodges is still reviewing new technologies today, but now he is the mammoth oil company's general manager of computers. The post he has held for 15 years puts him in charge of Texaco's computer facilities worldwide.

The added edge of technology makes Texaco a strong competitor in the very competitive oil industry, Hodges claims. Technology currently in use encompasses a wide spectrum — from Cray Research, Inc., IBM, Univac and Digital Equipment Corp. to Data General Corp., Datapoint Corp. and a vast range of personal computers, he adds.

Because of its large size, the firm is often asked to beta-test products and is involved in the early shipment programs of many vendors; Hodges says this is often advantageous in keeping Texaco on the leading edge of the computer industry's curves, twists and turns.

Texaco's size also gives the company a very large user community. Hodges says this user base often provides him with useful suggestions. Recently, Texaco U.S.A. requested microcomputers to automate its oil fields. Hodges and his team built the micros that will be used chiefly in refinery process control.

ALAN J. RYAN

years away, many dug in their heels.

"OSI is where we want to be in the future, but we'll be taking a very hard look at TCP/IP next year," M. W. Kellogg's Lee says. Users "just can't wait that long for the magic of OSI," Infonetics' White says. "They've got to [integrate] now."

That temporary fix, TCP/IP, now shows strong signs of blossoming into a robust alternative to OSI. "Next year is one of those critical transition periods where TCP/IP may get enough support and enhancements to become a long-term viable alternative to OSI," says Harry Saal, president of Network General Corp.

One obstacle is the recent inability of the TCP/IP Network Management and Gateway Monitoring Work Groups to settle on a standard for network management, similar to the standard for Netbios agreed upon earlier in the year. A decision, however, is expected within the first quarter of 1988.

Gary Weis

Another issue is whether current users of TCP/IP, having invested in that technology, will switch to OSI several years down the road, White says. The answer seems to be no, which is why speculation abounds that the ISO will adopt the TCP/IP platform for absorption into OSI.

At the same time, supporters of TCP/IP are hedging their bets. Many have announced plans to support the first four layers of the OSI model. And with good reason. As of 1990, all government requests for proposals must be OSI-based, claims Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C.

### Migration costs

On a lower level, network managers face an equally challenging integration issue: intermixing their current PCs and LANs with the new wave of IBM desktop systems — the Personal System/2s — and those machines' companion operating systems, OS/2 Standard Edition and OS/2 Extended Edition. Migration costs and interoperability problems, such as moving files between different operating systems, could stall implementation of the new microcomputer generation on networks.

"When you are looking at OS/2 Extended in the server, is the user going to have to upgrade from IBM's PC LAN Program to the Extended Edition? Will there be additional requirements on the machine? And what's this all going to cost?" White asks. These are not trivial questions by any means.

Some users have already decided the cost trade-off is worth the increase in capabilities. Gary Weis, a vice-president of the Data Communications and Software Services Division of Sears Communications Network, Inc. in Chicago — a Sears, Roebuck & Co. subsidiary — is looking forward to using OS/2 on the server, especially to eliminate the memory constraints inherent in Microsoft Corp.'s MS-DOS. Sears has one of the largest IBM Systems Network Architecture networks in the country and is a major user of electronic data interchange.

The Travelers Insurance Co. has already decided to standardize on the PS/2 and is wasting no time installing those machines on its IBM Token-Ring LANs.

Still, until applications using OS/2 are available, it is hard to determine whether networks sporting a mix of the old and new will suffer through a generation gap of incompatibilities. On the whole, network managers do not seem too concerned. They are more interested in OS/2 Extended Edition anyhow, and analysts do not expect that version to really take off until 1990.

### The SAA future

Even farther on the horizon, beyond OS/2 Extended Edition with its communications and data base managers, lies Systems Application Architecture (SAA), IBM's blueprint for connectivity, which is at least two years away from producing any commercially available products.

Despite obvious annoyance with vaporware, network managers are convinced SAA represents the technology of the future — if not the key to the promised LAN.

"SAA, from an architecture standpoint, will be come increasingly important to the Sears family of companies," says Sears' Weis, adding that SAA will have a much more profound affect on the builders of network applications.

"The technology steerers here will

follow SAA intently," says the communications manager for the New York-based financial institution. "If we sit back and wait, we'll do a disservice to the organization."

But no one expects SAA to be much of an issue in the coming year. While the progressive users gear up to embrace SAA once it becomes available, observers say the vast majority of network users will have spent the last twelve months figuring out who is responsible for the current tangle of installed communications equipment. Having resolved that problem, 1988 will be spent figuring out what to do with what they have got.

# Token rings taking competition by storm

There just doesn't seem to be any doubt about it. There's a gale force brewing off the network coast, and its name is token ring.

Fueled by a furious flurry of promises during the last two years and fed by multiple waves of product introductions in 1987, this tempest is expected to batter the competition in 1988.

And if the recent past is any indication, even IBM will have problems keeping abreast of demand. First announced in October 1984, IBM's Token-Ring network began shipping during March and April 1986 and has faced chronic board shortages ever since. Ellen Hancock, president of IBM's Communication Products Division, told analysts at a recent briefing that IBM is unsure of the demand for Token-Ring because the company has never been able to fill it. She went on to promise to rectify all component shortages by the first quarter of 1988.

At another recent seminar, Maurie Prauner, IBM's manager of local-area network products, told *Computerworld* that 85% to 90% of IBM's top 250 customers have accepted the Token-Ring as a major architecture. IBM's Token-Ring shipment volume increased five times from 1986 to 1987, he said, adding that IBM expects the volume to double again next year.

More specifically, IBM has installed more than 12,000 Token-Ring networks supporting more than 200,000 users, according to Terry R. Lautenbach, vice-president and group executive of the Information Systems & Communications Group at IBM while speaking to a group of financial analysts last month.

The number of token-ring nodes installed annually in the U.S. market will double between 1986 (9,664) and 1987 (19,328), doubling again in 1988 (38,656), according to "The IBM Directions Report," a publication of Los Altos, Calif.-based International Technology Group.

### Taking over Ethernet territory

Ethernet, in particular, will feel the brunt of the token-ring's surge in popularity.

In a recent survey, about 150 users were asked whether their first consideration for their company's next LAN would be a token-ring rather than Ethernet configuration. Users responded in one of four categories: 16% said "definitely;" 26%, "possibly;" 35%, "uncertain;" and 23%, "definitely not," according to Cecilia Brancato, who conducted the study and currently works as a senior analyst with Oppenheimer & Co. in New York.

Figures obtained from several market research firms show token-ring, or IEEE 802.5, sales experiencing quite a leap in the course of 1987, so much so that many analysts agree that its sales have overtaken Ethernet in the personal computer LAN segment.

According to The Yankee Group in Boston, Ethernet sales in the PC market will plunge 50%, dropping from a high market share of 32.5% in 1986 to an estimated 16.2% in 1988.

Conversely, token-ring market share is expected to triple between 1986 and 1988, jumping from 13.1% in 1986 to 30.7% in 1987 to 39.3% in 1988, The Yankee Group says.

Sales are expected to accelerate so fast that by 1990, token-ring products will command a 46.9% market share, leaving Ethernet a distant second with its 10.3% market share, the research firm adds.

Although Ethernet is expected to retain the upper hand in the general-purpose, or departmental, network market, market share for that technology is, nonetheless, declining.

The Yankee Group pegs Ethernet market share at 60.6% in 1986, estimating a drop in share to 50.1% this year and, by 1988, sinking yet another 6.4%.

Token-ring sales, on the other hand, are on the rise. Market share jumped 14.1% in 1987 from the previous year's sales of 13.4%. Market share will inch up another 5% to 32.6% next year, The Yankee Group estimates.

PATRICIA KEEFE

# LAN applications: Some assembly required

## *Availability is limited, performance uneven*

BY KATHY CHIN LEONG

There is no greater childhood letdown than ripping open a Christmas present and reading, "Batteries not included." Today's local-area network users face a similar discouragement. The applications software "batteries" do not come with prepackaged LANs. Like toy accessories, programs for networks are each sold separately.

Users seeking such software face several confusing obstacles, including the following:

- The variety of applications for networks is limited.
- The software that is available fails to support all LANs.
- The software behaves differently on individual networks, so performance varies.

Vendors are equally confused. They must decide exactly which applications should be converted and how much change should be made to the original programs. And, importantly, whether or not the software will sell.

Microsoft Corp.'s Adrian King, director of operating systems and product marketing, notes that companies such as Microsoft only make network versions of single-user software "when it makes sense. Some things are not necessary for a network," King says. Of the myriad of applications software at Microsoft, only Microsoft Word, Multiplan and Project are available in network versions.

Opinions vary when experts are asked how much network software is actually being sold. According to Chuck Stegman, product manager of networks at Businessland, Inc., network software sales are doing well. "It is growing. There is definitely a demand for these products," Stegman says.

In fact, he says that for "every question I get from customers about communications software to mainframes, I get two or three questions about LAN software."

At MBI Business Centers, Inc. in Rockville, Md., a corporate account manager explained that sales of network versions of single-user packages are strong and steady.

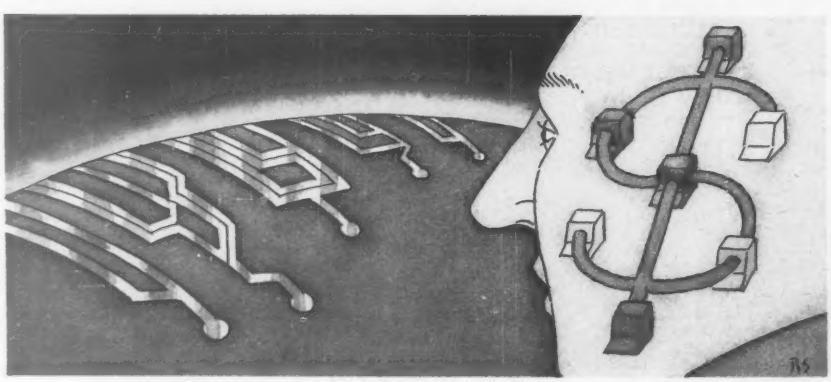
"Many large companies standardize on the software they use. When they begin to install LANs, they naturally buy the network version of that product," the account manager explains.

Despite these glowing reports, consultant Gary Kwok of the Lanquest Group in Santa Clara, Calif., says users, accustomed to unattached workstations, are slow to change. "People do not understand what the network version of a package really does," Kwok says.

Unlike a single-user version, network versions, or "network-aware" software packages, take into consideration file- and record-locking features and allow users more flexibility in terms of peripheral sharing and document merging, according to some consultants.

**Pricing**

In addition to lack of education, cost may prevent many users from buying a proliferation of networking software. While network versions are



ROB SAUNDERS

cheaper per workstation than single copies, users are still dismayed at the high prices. Ashton-Tate Corp.'s Multimate Advantage, normally priced at $595 for one user, is tagged at $1,195 for a three-user license.

"I'm not satisfied with these types of licensing arrangements," says Dave Lively, manager of special projects at GTE North, Inc. in Westfield, Ind. "Things are still overpriced. If you are going to make networking software available, then you should make the costs

**Thomas White**

substantially lower," he says.

Bill Thompson, a senior planning analyst at Black & Decker Corp. agrees. "The expense of the licensing agreements makes it difficult for us to look at network software seriously," he says.

**Single-user products**

When network versions are not available, users work around the limitations. For example, many corporations have made Lotus Development Corp.'s 1-2-3 a company standard, and until recently, no official network version of 1-2-3 existed.

At one East Coast site, users have been sharing copies of 1-2-3 on a network. The network administrator stressed that there are copies of 1-2-3 for each user as well, justifying the use of the package. "We make sure that we have paid for as many copies as there are users on the network," he explains.

According to Charles Hanes, manager of technical consulting at Lanquest, copy-protected single-user applications such as 1-2-3 can be run on a network if the protection schemes are unblocked. To do this, users must create a program themselves or purchase commercially available software that would get around the copy-protection mechanisms.

Single-user applications without copy protection can be loaded on a network file server. And the majority of applications on the market can be shared, consultants agree. Yet, there is one inherent danger in sharing a single-user program. According to Hanes, if users intend to share files, they must make sure they do not use the same name, or else they will overwrite the original file.

And there are other concerns. Steve Schneider, end-user computing manager at Bausch & Lomb, Inc.'s Professional Products division in Rochester, N.Y., must do his share of programming gymnastics to make these applications run on the company's 3Com Corp. LANs. "I fool around with the network utilities to make the software think it is still working with a single user," he notes.

The primary bottleneck in cramming single-user programs on a network is the limitation in output, Schneider said. Single-user packages assume that a printer or plotter is directly attached to the workstation, and no allowance is made for connections via a file server.

Other users have discovered that in order to get full cooperation from single-user software, workstation configurations should be identical.

GTE's Lively says he discovered some single-user packages, such as 1-2-3, do not allow default customization for groups of users. For instance, if someone has a different monitor brand on the network, the file server will not communicate with that monitor.

And some applications packages do not let users configure drivers above the "F" level. "We designate drivers using A to Z around here," Lively says. Even if the product is rich in both features and functionality, this driver limitation is enough for the product to be rejected.

Network versions of single-user applications allow users to send and retrieve files using one copy of the application. Network versions prevent file overwrite and let a number of peripherals be shared by the work group. But not all network versions of software act alike, which further muddies the issue of ease-of-use and setup.

The real differences among packages are noticed in each product's method of record and file locking, read/write capabilities and memory requirements.

The single-user and network versions of Ashton-Tate's Dbase III Plus are the same product with "network-aware" features. Hence, the application code is the same. However, network users must purchase the Dbase III Plus LAN Pack in addition to Dbase III Plus. While the memory requirement for Dbase III Plus is normally 384K bytes for workstation nodes, when running an IBM Token-Ring network, the suggested workstation memory is 512K bytes or more.

**A new type of software category — "work group software" — will evolve to take networking beyond the peripheral sharing stage.**

Obviously, users are not very happy with the unpredictability of existing software. "With MS-DOS as a single-user operating system, it is difficult to make multiuser functions available," explains Thomas White, president of Infonetics, Inc. in Santa Clara, Calif.

### Data base wars

In a recent report, Infonetics found that data base programs were the key stand-alone applications needed for use on a LAN, followed by vertical market programs, spreadsheets and word processing products. Exactly 26% of the respondents surveyed said they needed data base applications on their networks.

According to Nina Burns, an industry analyst at Infonetics, "It's clear that the LAN environment is perfect for data base applications. It's been in the minicomputer environment for years." Burns notes that there are fewer than 20 network versions of data base products on the market.

Atlantic Richfield Co. (Arco) in Los Angeles has previewed several data bases for network use, but has not come to any buying decision. "We are not comfortable yet with what is on the market," says Alan Brittner, Arco's manager of systems services. "In terms of security and data integrity, the micro data bases are not at the level of mainframes and minicomputers." According to Brittner, the company's LAN will eventually tie into the IBM mainframe environment. "I want to make sure that my people will have the kind of rich applications and features they can get on mainframes."

Two years down the road, many of these issues will be resolved. The advent of Intel Corp. 80386-based microcomputers and the IBM OS/2 multitasking operating system will speed up network transactions significantly. More and more vendors will be unlocking copy-protected programs, and porting over single-user applications to multiuser versions of software will become natural. A new type of software category — "work group software" — will evolve to take networking beyond the peripheral sharing stage. For example, Broderbund Software, Inc.'s For Comment package alleviates the hassle of manually passing around a hard copy document for review. The network version lets up to 15 "reviewers" attach their comments to an author's original word processing file.

While LANs will not come bundled with third-party network application software in the future, users will have more choices, and those software "batteries" should work without second guessing.

**Prices of network software vs. single-user applications**

| | |
|---|---|
| **WORDPERFECT** | |
| Wordperfect 4.2 | single ($495), network ($695 for file server and one workstation; additional copies cost $150 per workstation) |
| **ASHTON-TATE** | |
| Dbase III+ | single ($695), network ($995 for five users) |
| **MICROPRO INTERNATIONAL** | |
| Wordstar 4.0 | single ($495), network ($595 for file server and one workstation; additional copies cost $150) |
| **MICROSOFT** | |
| Word 4.0 | single ($450), network ($750 for file server and one workstation; additional copies cost $150) |
| Multiplan | single ($195), network ($195 for file server and one workstation; additional copies cost $75) |
| Project 4.0 | single ($495), network ($495 for file server and one workstation; additional copies cost $249) |

CW CHART

# *FUTURISTS*

When it comes to technology, the only perfect marriage is between the family and the computer.

Or so claims Rowan Wakefield, the founding editor of "American Family, the National Newsletter on Family Policy" and a member of the board of directors of the World Future Society.

"The computer is a multipurpose technology, and the family is a multipurpose social institution. Put them together, and you've got a truly empowered family.

"We already have what I call empowering software. The computer has made available in the home such basic services as tax preparation and will writing, but what about bringing traditionally outside services such as education and medical diagnostics into the living room?

"What happens when your kid can access a complete school curriculum at home? Does that mean we no longer need schools? Does software that allows medical self-diagnosis mean we no longer need doctors? It's only a matter of time before the technology and the applications become available to the general public," Wakefield says.

Not one to just sit around and talk, Wakefield has organized a computer users group from his home in remote Deer Isle, Maine. The 85-member group is trying to raise $7,000 to establish a dedicated line to the University of Maine at Orono that would allow them to tap into the Plato/Novanet educational computer system there. Sitting in their homes, users could have access to between 20,000 and 30,000 lessons ranging from fourth grade to graduate school level.

"As we empower the family through the use of technology, we are going to have to rethink the relationships between the family and service providers," Wakefield says.

"The role of the teacher or doctor will not disappear, but it will change dramatically, becoming more difficult. That's frightening to a lot of people, but it's something we are going to have to face."

According to James Botkin, big business must help educate people about technology.

Botkin, executive director of the Alliance for Learning, says, "Corporations spend more on education than all of the post-secondary institutions in the U.S., and the corporate guys aren't fielding football teams.

"Corporate education is putting traditional education to shame," he claims, pointing to internal education programs of companies like AT&T, GM and Du Pont. These firms use computers as well as information technology in an extremely innovative way, Botkin maintains, and they have the financial resources for it.

Botkin, the author of *The New Alliance*, which describes the partnerships between industries and universities, and *No Limits to Learning*, which describes how ill-prepared the world's education systems are to face the future, says the gap between the level of technology used in corporate education and that used in schools is widening. "This will lead to an outcry on the part of the public, the colleges and the universities," he says. "They will demand their share of technology."

Botkin maintains that businesses must start supporting technology in the education systems of the U.S. Why? Because "ultimately, the education world is the business world's source for innovative and creative ideas. That's something business can't afford to forget," he says.

Videodisk technology will ultimately open the home to computer technology, says Lane Jennings, co-author of *Xanadu: House of Tomorrow*, a book about the house of the future.

"Currently, consumers don't know what to ask for," says Jennings, who is also a writer for a documentary television production house and the production editor for *Future Survey* magazine. "Somehow, the public needs to be taught to think in terms of what they would like to use technology for that they can't right now."

Jennings says increased videodisk implementation in the 1990s will lead to changes in the home. "Once there is a single medium that can store information in every format for which we now use different formats, people will become excited about it," he explains.

According to Jennings, the new generation of computer-literate children will ignite this application of computers in the home. "Kids now are learning to think in terms of electronic environments. Knowing what they want, and feeling comfortable using it, will allow genuinely useful computer applications to enter the home," Jennings says.

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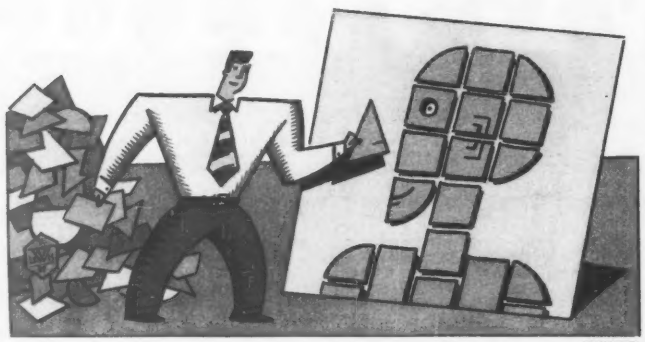
# Systems integrators

## *Where should MIS managers draw the line?*



TIM LEWIS

BY CLINTON WILDER

Three years ago, Morse Shoe, Inc. in Canton, Mass., faced a choice that has become increasingly common for information systems executives.

The $585 million retailer and distributor needed a sophisticated merchandise information system to get sales data from its 1,100 retail outlets to its merchandising department. The project was the textbook kind of strategic — or "mission-critical" — application of computer technology that is rapidly changing and elevating the MIS function in U.S. corporations.

But Morse Shoe went outside its MIS operation and chose a commercial systems integrator, Computer Partners, Inc. in Waltham, Mass., to design the system.

"At the time, we did not have a large enough or experienced enough staff to embark on that and be able to deliver it on time," explains Norman Weiser, Morse's vice-president of MIS. "We had no on-line development experience. It was necessary to bring in proven expertise as we developed our own staff."

The type of partnership that has worked well for Morse Shoe, however, conceivably poses a threat to the role of the MIS department in other organizations that are planning to use their information systems to gain a competitive advantage.

With commercial systems integration services being aggressively marketed by an increasing number of traditional federal government integration firms, hardware vendors and Big Eight consultants, user companies are struggling to define the role of MIS in the design of complex systems directly involved with the firm's business strategy.

"We're talking about sets of applications that are closest to the end users but may be farthest from the DP operation," says Cato D. Carpenter, a software and services analyst with Baltimore-based Alex Brown & Sons, Inc. "Who is going to be responsible for building those strategic systems? The answers aren't terribly clear at this point."

The potential systems integrator-MIS conflict is a major difference between commercial and government integration projects. While government agencies with limited data processing resources have been content for years to let companies like Computer Sciences Corp. and Electronic Data Systems Corp. handle tasks like hardware procurement and applications development, those same tasks have been the province of MIS directors in the commercial world.

"The whole notion of bringing in a third party can be seen as a threat, no matter what business you're in," says Karen Kugel, manager of the computer services program at International Data Corp. (IDC), a market research firm in Framingham, Mass. "It's an issue of control; you feel that an outside party will be learning the nuts and bolts of your operation."

The conflict often stems from the origin of the integration project in a part of the company far away from the data center. A computer-integrated manufacturing project on the factory floor, for example, can be consummated between an operations or manufacturing executive and the third-party integrator.

"MIS grew up with the mainframe," says William G. Rankin, a Deere & Co. engineering executive who now heads the company's own systems integration unit, Deere Tech Services (see story page 78). "The smaller, multivendor environment that grew up from engineering and shop floor applications was a whole different experience."

"People on the manufacturing side are often further up the technology learning curve than MIS people doing payroll applications," says Jim Burns, partner in charge of the systems integration practice at Arthur Andersen & Co. in Chicago. "You constantly run into the problem of who's going to be in charge. There's

a need for someone to sit on top of the whole project."

At an increasing number of U.S. corporations, however, conflict is avoided or minimized — often in creative ways. To Weiser at Morse Shoe, for example, the roles of Computer Partners (now a Computer Sciences subsidiary) and his own MIS staff were clearly defined from the outset.

"They made it clear that they don't want to be our MIS staff," Weiser says. "They're here for ad hoc development work, and our people have to know how to take over when they leave. Many people in the company outside our department don't know that [Computer Partners employees] aren't part of Morse. It's a very integrated relationship — but one that we both know will end."

Baker & Taylor Co., a New York-based book distribution unit of W. R. Grace & Co., achieved a similar cooperative relationship with systems integrator American Management Systems, Inc. (AMS) in Arlington, Va. AMS developed and installed Libris, a strategic system to automate book ordering by Baker

**Patrick W. Gross**

& Taylor's library customers. Like Morse Shoe, Baker & Taylor felt it did not have the internal resources to develop the system itself.

The success of that project depended on a strong understanding by Baker & Taylor's MIS department of what role it could and could not play, according to Patrick W. Gross, an AMS cofounder and chairman of the AMS executive committee.

"The MIS function should really understand the business and the business strategy; it has to be an interaction with top management," he says. "The most successful leaders are those who will keep an open mind, not simply wonder whether they can keep a project for themselves."

"You suffer as an MIS director from a certain myopia in your own systems environment," IDC's Kugel adds. "A third party brings a different perspective and is aware of several technology options. The MIS director should owe it to himself to hear what they have to say — and more and more Fortune 500 companies are."

That open mind must extend to the systems integration vendor as well, however. "To really make the project work, the vendor has to be both all-knowing and humble," says Richard Peterson, a Parsippany, N.J.-based principal consultant with market research firm Input. "To sell the job initially, you have to pretend you're God. If you get the job, you have to say, 'I want to work with you, and here's where you can do a lot.' You can't have a holier-than-thou attitude toward your MIS counterparts, but I'm not sure all vendors can turn that off."

As important as attitude is the ability to identify where the MIS expertise best fits into a particular project. One logical place to start is in the communications interfaces between the strategic system and the firm's existing technology.

"The networking and telecommunications area is a driver for MIS involvement," says Dennis Sigloh, director of systems integration for IBM's Information Systems Group. "If you're dealing with voice/data integration and network control and management systems with large T1 backbone networks, you're going to need MIS and someone on the telephone side as well. We see those requirements in all of our industries."

### Infant stages

In many ways, commercial systems integration is "still in its infancy," says Carpenter of Alex Brown. Despite some recent highly visible contracts, such as Allegis Corp.'s United Airlines project with IBM, a large number of users have not plunged into major systems development work with third-party integrators.

But as more executives view information technology as a vehicle for business strategy, MIS directors will face the choice of how to tackle the development and implementation of those strategic systems. A systems integrator may not always be the best choice but will be an option worth considering.

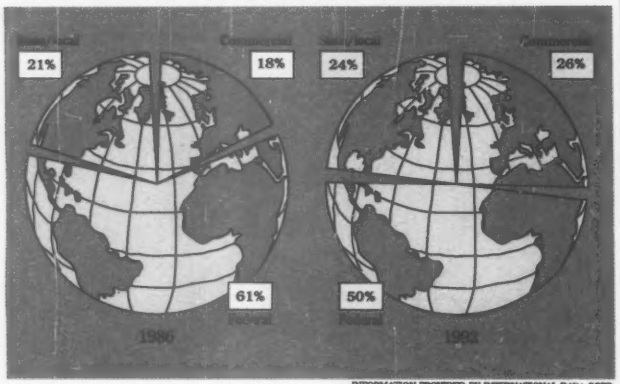
"In the largest organizations, my guess is that they will be willing to go with the outside vendor if that vendor has met with success in other organizations," Carpenter says. "MIS people are smart, but most are inherently risk-averse. They can still control the basic

hardware and systems software, and probably the data base. All they're giving up is the riskiest part — developing new systems."

The need for commercial systems integrators to do "missionary work" has lessened considerably, says Roderick M. Bryden, chairman of SHL Systemhouse, Inc. in Ottawa, Canada, whose commercial clients include Motorola, Inc. and Safeway Stores, Inc. Bryden says MIS departments are becoming increasingly comfortable with systems integrator partnerships as technology and the strategic application of it becomes more complex. "Five years from now," Bryden says, "I think it will be as unusual to develop and integrate all of your own systems as it will be to build your own microcomputers."

**Worldwide systems integration market, 1986 and 1992**

*IDC projects that the commercial systems integration market will grow 26% annually through 1992, outpacing yearly federal market growth of 15%*

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CW CHART: MITCHELL J. HAYES

# Taking integration in-house

MOLINE, Ill. — Deere & Co. does not have to hire a systems integrator for its factory automation projects. Why? Because Deere has developed its own integration group — and hopes to sell its services to other companies.

Deere Tech Services grew out of the farm equipment maker's engineering department, which had tackled internal projects ranging from factory simulation modeling to the first commercial installation of Manufacturing Automation Protocol (MAP). Formalized as a Deere business unit in October 1986, Deere Tech Services has doubled in size to 40 employees since then.

"We used traditional systems integrators in here before," says William G. Rankin, Deere Tech Services' vice-president and general manager. "We used to think we needed the grandiose solution before we could do anything ourselves. But we took on smaller pieces of it and, in the process, built a significant skill base. We found that companies that visited Deere were asking if what we were doing was for sale."

Deere Tech Services is currently bidding for outside systems integration business and will be a subcontractor for the U.S. Air Force's MAP/Technical and Office Protocol demonstration at a Baltimore trade show in June.

Rankin is particularly proud of the unit's software development work, which uses sophisticated computer-aided software engineering tools on networked workstations.

**'Substantial software skills'**

"People hear about John Deere and software, and they think it's Fortran stuff hacked out in the back room," he says. "But we have really substantial software skills."

Deere Tech Services is very separate and distinct from Deere's corporate MIS function. "They use our computer facilities, sell some services that run on our machines and look to us for certain kinds of specialized help," explains Robert Bulen, Deere's director of computer systems. "But they have generally done the whole thing themselves."

On the horizon, however, Rankin sees a growing interaction with the MIS operation.

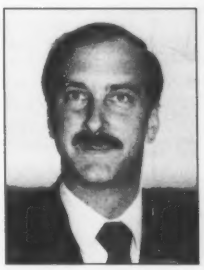
"Even though we're coming from very different environments, our MIS group is recognizing growth opportunities for computer technologies on the shop floor," Rankin says. "I think the major connecting points will deal with relational data bases and telecommunications and networking issues."

CLINTON WILDER

# Technology on the rise in vertical markets

Computing has become less a general-purpose technology and increasingly a series of different technologies tailored to specific tasks, such as factory automation, education and transaction processing. In 1987, this trend gathered momentum. In 1988, it is expected to continue.

What technologies can we expect to see more of in vertical markets? *Computerworld* senior writer Stanley Gibson polled top specialists to learn just what technologies the new year will provide.



**On the auto industry:** BEN MILBRANDT, electronic data interchange (EDI) manager at Navistar International Transportation Corp. in Chicago:

"EDI will have expansive growth in 1988. It will be like a snowball tumbling downhill. Three years ago, people asked, 'What is EDI?' Back then, there were 50 people at the ANSI X.12 meeting. This year, there were 500.

"Now, there is a virtual explosion in EDI. People are finding it's easy to use, and they want to do more of it."

**On the retail industry:** JOHN CHAY, vice-president of the information systems division of the National Retail Merchants Association in New York:

"There will be bar codes on all kinds of merchandise, even on boutique items and clothing. Those kinds of detailed standards and specifications are already defined. It's just a question of implementing them.

"Also, people want more powerful terminals at the point of sale, so they can look up prices on the terminal and access other data."

**On government:** ROBERT L. ROSS, director of Agency Liaison Officers Programs of the General Services Administration:

"The largest change in federal government purchasing seems to be the large amount of microcomputers that agencies are buying: 20,000, 30,000, even 40,000. In addition, many agencies are looking very seriously into desktop publishing. Also, we are trying to be better buyers. We are using systems integrators more. Instead of buying hardware, we are attempting to buy solutions."

**On education:** MIKE LAWSON, associate professor of economics, chairman of the MIS department and director of the MIS master's degree program at Boston University:

"There is a movement to bundle PC programs with textbooks. In addition, textbook makers are giving students problems that have to be solved on a personal computer. This integrates the use of computing into their thinking. Most major business schools have put in microcomputers over the years. Now they face integrating them successfully in networks."

**On the oil industry:** ALLEN N. SMITH, manager of corporate systems for Atlantic Richfield Co. in Los Angeles:

"In the oil business, the challenge will be to continue to provide services with limited budget growth and constraints. The most outstanding technical challenge our shop faces is integrating local-area networks."

**On health care:** FRED PIRMAN, senior vice-president of information systems for Humana, Inc. in Louisville, Ky.:

"We are trying to leverage our technology in a competitive environment. We are installing a system that automates processes in a hospital, including a patient's medical records, physician's orders, X-rays and pharmacy records. All of this will be on-line. Data will be captured at the point of care in bedside terminals. Forty percent of nurses' time is spent recording what they do. This [system] will reduce that to 5%."

**On aerospace:** JOE MCGRATH, director of MIS at Avco Aerospace in Nashville:

"I would like to see some of the software companies offer a connection between Cadam [from Cadam, Inc.] and our manufacturing. . . to extract the necessary parts descripton from an engineering parts list, which derives from a Cadam drawing, and to go from the parts bill to the manufacturing bill that would drive the MRP II system. Either someone helps us with it, or we will keep chipping away and eventually do it ourselves."

**On publishing:** PAT STADEL, administrative vice-president and director of administrative services at Addison-Wesley Publishing Co. in Reading, Mass.:

"We are going to see increasing use of computers in publishing. We will see more telepublishing. Authors will write their books on PCs and transmit the texts to editors. Editors will then transmit the texts to the printers. Someday, customers will request book chapters electronically. They will be downloaded to a PC, then copied under a site license."

# CIOs: Top-tier managers for MIS strategy

## *The label misleads, but function is needed*

TIM LEWIS

BY JULIE PITTA

Chief information officer. The title implies that the MIS executive has stepped out of the computer room and into the executive office. But to many in MIS, the CIO title is, at best, a source of irritation.

"I think it's a bad title," says Ron Brezezinski, vice-president of information systems for Quaker Oats Co. "It sets you apart from your peers and gives the MIS professional too much of the spotlight.

Information services "is supposed to be as transparent to the company as possible," Brezezinski continues. "I've heard that a CIO is supposed to influence corporate culture and leverage technology to create a competitive environment. A good information services professional does that without any special label."

"I've never thought about changing my title to CIO," adds Harvey Shrednick, vice-president of information services for Corning Glass Works. "The title wouldn't give me any more relevance. It doesn't mean anything."

William Synnott, senior director for The Yankee Group in Boston and a former MIS executive, claims to be the first to have coined the phrase "chief executive officer" several years ago in his book *Information Resource Management.* The emergence of the CIO is a reflection the changing role of MIS within American corporations, Synnott adds.

The MIS community's aversion to the CIO title is likely the result of the title not reflecting the tasks. In some cases, the title has been used as a perk for the hard-working MIS professional rather than as a recognition of his changing role within the organization, Synnott says. "At Christmas, there's a Santa Claus on every corner, but they're not all real," he explains.

Controversy surrounding the CIO title may have contributed to its slow acceptance. "I think the trend toward CIOs has slowed in the last six months because of some adverse publicity," says George Rusznak, vice-president of the Index Group, Inc. in Cambridge, Mass. "Some companies are reexamining the title or getting skeptical about it." An even greater reason for its failure to catch on quickly can be traced to the continued grappling by corporate America to understand where MIS fits within the overall organization.

Mike McMahon of Rolm Corp. is a CIO who fell victim to his company's struggle with the role of MIS. Recently, McMahon's title was changed from CIO to manager of communication services. "It created confusion," he explains. "Some people misinterpreted what it meant — they thought I was an officer of the company, which I was not.

"CEOs are still trying to understand what role [information services] should play within the organization," he continues. "In some circles, information services is still viewed as an expense rather than a weapon."

Although estimates vary, those who have been named CIOs are an exclusive group. Harold Cypress, vice-president of the Western region for John Diebold & Associates in New York, says he believes only a dozen CIOs exist within corporate America.

"There are fewer CIOs than the world thinks there are," concedes George Colony, an industry analyst for Forrester Research, Inc. in Cambridge. Of the 15,000 names in Forrester's data base of MIS professionals at Fortune 1,000 companies, not one carries the title of CIO.

According to one CIO, between 50 and 75 executives attended a CIO symposium sponsored by Arthur Andersen & Co. last year, making that gathering more an intimate group than a crowd. Of those attending, not all officially carried the title.

While card-carrying CIOs may be scarce, industry observers say a new type of MIS professional is emerging within large corporations, although not quickly enough. According to

*Continued on page 84*

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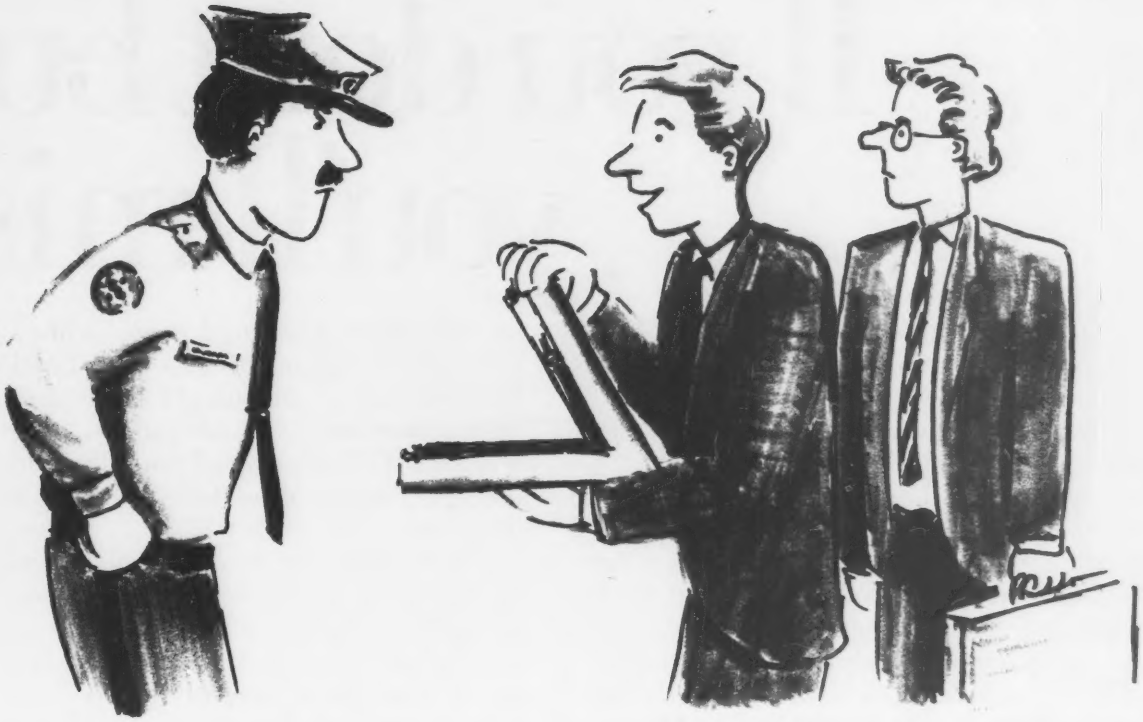

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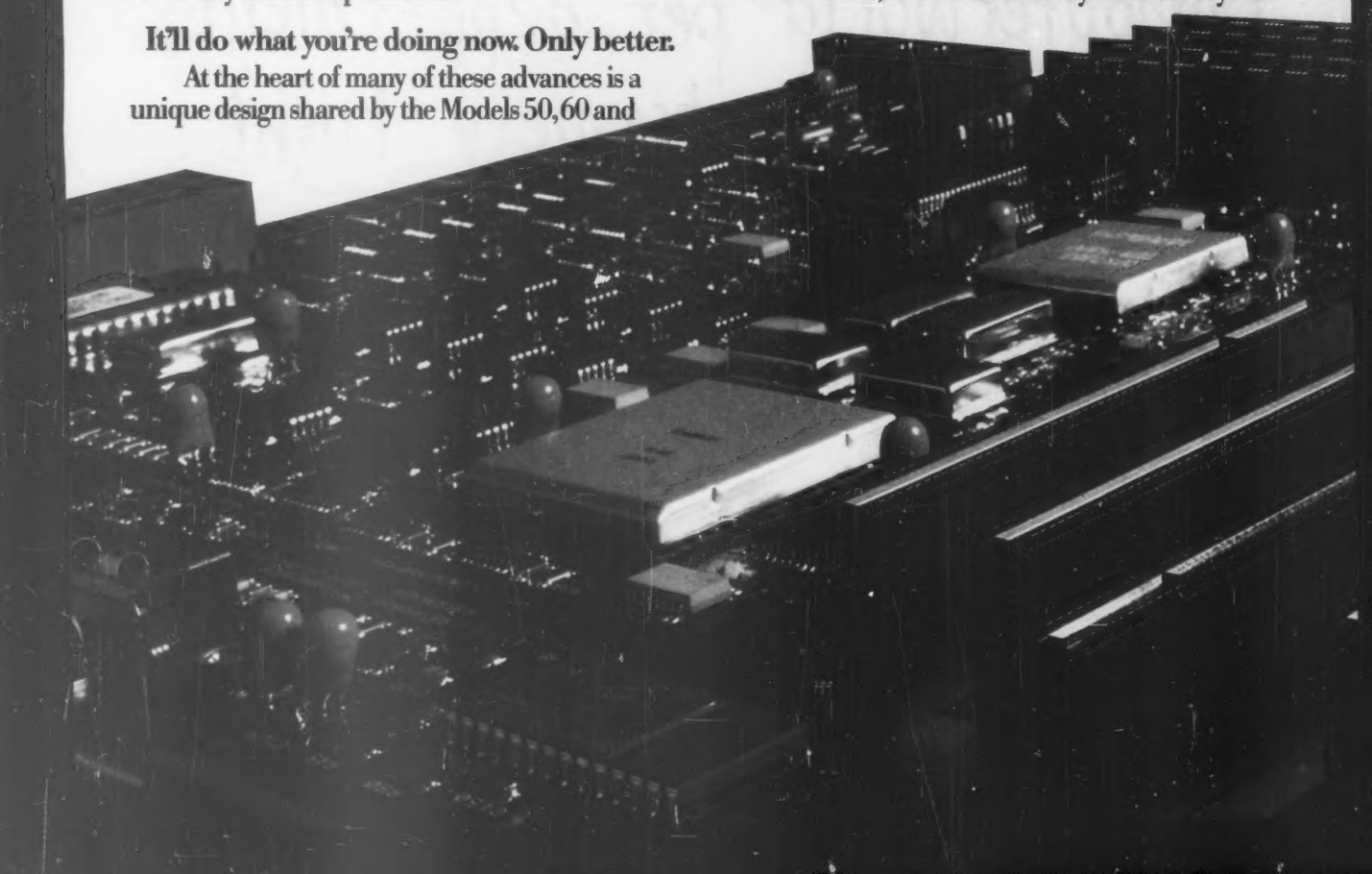

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# CIOs

CONTINUED FROM PAGE 80

Synnott's estimates, "at least half" of the Fortune 200 has an MIS professional acting in what he calls a CIO-like role.

"The MIS director is a day-to-day operations guy who runs the data centers, builds systems and networks," Synnott explains. "The CIO deals principally with long-term strategy. He is the architect of the firm's information resources.

"Whether they actually use the title CIO, there will be people filling this role within the organization," he maintains.

What represents perhaps the greatest difference between a CIO and a traditional MIS executive is the degree to which each influences the organization.

Unlike the stereotypical MIS director — hidden in the computer shop surrounded by chugging mainframes — a CIO is a member of the senior management team.

"Most importantly, it has to do with the reporting arrangement," says Michael Carrico, CIO at American Medical International, Inc. "A traditional MIS director generally reports to the chief financial officer. I'm one of five people who report to the chairman."

George Rusznak

"I have a better understanding of the corporate strategy," says Rick Adam, newly appointed CIO at Goldman, Sachs & Co. "I'm included in senior management meetings."

**Strategy part of the job**

Acceptance to the senior management team implies responsibility for overall corporate strategy. Further, it recognizes that information systems is a strategic tool.

CIOs say they have abandoned the day-to-day operations of the MIS department, leaving them in the hands of an MIS professional strictly charged with those responsibilities.

Instead, CIOs act as part of the "management console," setting corporate direction and helping to implement it. They bring to senior management the ability to use information services to a strategic advantage.

"You have to think like and behave like a senior executive as opposed to a functional executive," Index Group's Rusznak says. "You deal with issues that cut across organizational boundaries and functional units."

"What a good MIS executive does is connect the technology to the business," adds Darwin John, vice-president of information systems for Scott Paper Co. "Technology is something that can make a difference competitively."

While John has not been appointed CIO — nor does he want to be — he is also a member of the new class of MIS professional. Like Carrico and Adam, he reports to the chief executive and has abandoned day-to-day operations in favor of strategic planning.

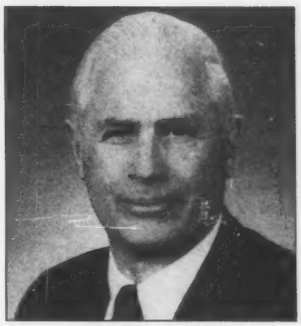
Not enough MIS professionals have the power accorded to Carrico, Adam and John, experts say. "Some of the people who call themselves CIO are carrying it more in title than in function," Carrico says.

Ideally, a CIO should act as an adviser on a broad variety of business issues, but many who act in that role find themselves segregated from the mainstream of the business, Diebold's Cypress says. Many have access to senior management only through MIS steering committees. Not only do they not play a role in setting strategy, they also are not apprised in advance of new business initiatives.

Companies that have failed to integrate information services into the mainstream stand to suffer, Cypress says. "The function of CIO is critically important to the American corporation, even though the title has not gone over," Cypress maintains.

Information-intensive industries — like financial services — have been among the first to recognize the importance of information services. Not surprisingly, those corporations have offered their MIS professionals more clout within the organization, experts say.

But where will corporations find the MIS professionals needed to fill the top role? Synnott says the division between CIOs who have risen up the ladder through the MIS organization and those who have migrated from outside the data



Dudley Cooke

processing shop is currently evenly split. But he believes the scales will tip toward the CIO-type who has a general-business background rather than a technological one.

"A lot of senior managers feel more comfortable appointing a business person who can learn the technology, rather than a technical person who must learn the business," he explains. "A lot of technologists have not bothered to learn about the business that the corporation's in," he adds.

MIS professionals can suffer from the same short-sightedness of which some have accused senior management: A failure to understand the many facets of their corporations.

"I've been very impressed with a lot of the information services people I've met," says Dudley Cooke, general manager of the information systems division for the Sun Company, Inc. "If you have a good technology background, and you've learned the business along the way, then you're qualified.

"There are some people who all they want to do is talk technology," he continues. "They'll never make the shift."

"You need to change, grow and develop and become more connected to the business," advises Scott Paper's John. "Otherwise, someone will come over from the business side to do it for you."

# CIOs: Not an elitist group

Goldman, Sachs & Co.'s Rick Adam is a business-card carrying member of what can be described as an exclusive sector — chief information officers at large companies.

Adam is not new to the club. For four years, he was CIO for Chicago-based Baxter Healthcare Corp., a post he left last month to take over Goldman Sachs' MIS organization. How exclusive is the grand order of CIOs? At a CIO symposium sponsored by Arthur Andersen & Co., Adam was one of 50 to 75 attendees.

Although the title has come under fire from some long-time MIS professionals, Adam says a need exists for a CIO within large organizations. Whether or not that person officially holds the CIO title is not important, he maintains.

A title "is not critical," Adam says. "In corporations, senior management is often given the title of officer. That part of the title indicates that the MIS director has risen in the hierarchy. The 'chief' portion of the title shows that the firm looks to one person to be responsible for all information systems, not just a portion of them."

**The 'chief' portion of the [CIO] title shows that the firm looks to one person to be responsible for all information systems, not just a portion of them.**

RICK ADAM
Goldman, Sachs & Co.

After three years as vice-president of information systems at Baxter Healthcare, Adam was made CIO, an appointment he calls an acknowledgement of his changing role rather than a promotion.

"My job didn't change," he says, noting that he was already included in senior management meetings at Baxter Healthcare. "It was a recognition by the company that information systems had become more important."

Like many who head information systems at large companies, Adam, 41, came to MIS from the business side. Before moving into MIS at Litton Industries, Inc., he was a marketing representative for IBM. He holds a general engineering degree from the U.S. Military Academy at West Point and an MBA from Golden Gate University in San Francisco.

Adam says he combines his business acumen with his technology background to "make sure that systems technology supports the objectives" of the company. He has a tall order to fill at Goldman Sachs, which is in the midst of a move from Unisys Corp. to IBM hardware.

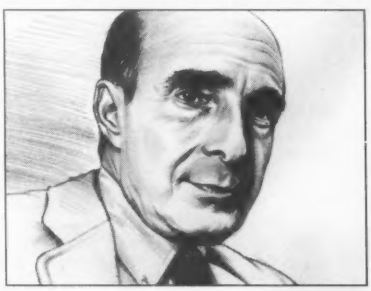
JULIE PITTA

# Rockart's Wired Society

## *Sloan School administrator tells MIS chiefs to find a vision for the future, then share it*

*Once dominated by isolated computers serving basic support roles, corporate information systems are evolving into complex data networks. They will soon link departments within companies and companies with suppliers and customers in "The Wired Society."*

*This vision of the world in the 1990s is that of John F. "Jack" Rockart, director of the Center for Information Systems Research at MIT's Sloan School of Management. Author of the Critical Success Factors strategic planning method, Rockart spoke with* Computerworld *senior writer Michael Sullivan-Trainor concerning the dynamic role MIS executives will play in this future society.*



ALAN WITSCHONKE

**CW: How should MIS executives prepare for what is coming?**
ROCKART: They should visualize their jobs as involving two major roles: one, ensuring that the computer network supporting their company is there and, secondly, being the staff information technology gatekeeper, responsible for educating the line managers as to how to utilize technology effectively.

**CW: How is that different from what they are doing now?**
ROCKART: Both are proactive roles. There also ought to be a document that sets a vision of the way the organization will be using information technology five to 10 years from now. That vision ought to be shared with the rest of senior management.

That is very different from thinking about how to support all the users who come to the information technology organization with needs. Helping them prioritize their needs has been the reactive role that the head of information technology played in the past. Unfortunately, that is not the way the game ought to be played these days, because the technology can make a difference to the success or failure of an organization.

**CW: You have suggested that line managers will be the leaders of "The Wired Society." How will that affect MIS executives?**
ROCKART: As the use of information technology grows throughout the organization, the information technology person's job changes significantly.

Many years ago, the DP manager was really a programmer and systems analyst. He developed batch systems with a few people around him in one central location.

As we went to on-line systems, the head of information technology slowly but surely became a matrix manager, moving more into a staff role. His job was to make sure that each of the functions of the corporation was doing good planning, career management and so on. He became more of a consultant.

Then, as we moved to the user era with personal computers and fourth-generation languages, the head of information technology's job changed from managing transaction processing systems to managing those systems as well as managing the retail use of computing. Another major segment, the management of end-user computing, was added.

**CW: What will be added to the role in the future?**
ROCKART: As we work toward "The Wired Society," people want to get access to data anywhere, from any point in the organization. A major role for the head of information technology will be the development of the computing, software, network and data architecture, which allows people to communicate from anywhere.

That is not a small job. The data architecture, in particular, is a real bear. If that alone were the job, it would be very significant. But that is not the only part of it.

Another major part is persuading line management proactively of the things it has to do to make sure the corporation is making the best use of the technology.

The original DP manager doing batch processing was essentially an accounting clerk. This new manager will either be one of the chief executives of his firm or in the top six or seven on the management board.

**CW: What does this mean for the MIS organization? Will it diversify into other departments?**
ROCKART: Will it completely go to other departments? Hell, no.

Managing the networking infrastructure cannot be delegated to other departments. There has to be a strong central technology organization whose job is to ensure there is a common, consistent computer and network structure. There must be an organization capable of working between and among functions and divisions to help them not only manage data within the division but also manage data across the organization.

**CW: Will you need some aspects of both a centralized and a distributed structure to support a large organization?**
ROCKART: There's no doubt about it. At one extreme, you are not going to centralize your manufacturing process control computer. At another extreme, it does not make sense today to have an accounting department in every division, warehouse or branch office.

The idea today is to use the technology in the best way possible to cut down on the total number of people — both information technology people and clerical people of various sorts — and still remain responsive to the needs of customers.

**What you're seeing today are guys who are not as capable technically as they used to be. They cannot maintain that same depth of technical expertise.**

**CW: What will happen to the need for the head of information technology to possess technical expertise?**
ROCKART: What you're seeing out there today are guys who are not as capable technically as they used to be. They cannot maintain that same depth of technical expertise. What you have are people with enough understanding of the technology to manage technical experts. A significant number of the new heads of information technology do not come from information technology. They come from other parts of the business.

**CW: So the executives will have to place more trust in certain key technically oriented subordinates?**
ROCKART: No more trust than a good executive puts into anybody stationed beneath him. If you know something well, you can judge a single expert beneath you. But if you don't know something well, you triangulate in on the truth. These guys are getting advice from one or more key subordinates and occasionally fro... outside people, vendors, consultants and their peers.

**CW: Much of what the new information technology executive is becoming seems to be part of the chief information officer concept. Is "CIO" a transitory title or an indication of the future?**
ROCKART: I have come to believe it is a misleading title. It makes one believe that the chief information officer is in charge of the information in the organization — and he is not. The head of manufacturing is the chief manufacturing information guy.

You will find that the title is not being used in too many organizations. What we have are senior vice-presidents for information technology and vice-presidents of information systems.

**CW: What would be a good alternative title?**
ROCKART: I prefer the chief information technology officer, because that is really his role — managing information technology, advocating it.

But the title should get away from "chief" entirely.

The chief financial officer started off with a slightly negative overtone, but it has become very respectable. There is good acceptance of the fact that somebody has to be overseeing the finances for the organization. It is not yet clear that somebody has to be overseeing information for the organization.

**Managing the networking infrastructure cannot be delegated to other departments. There has to be a strong central technology organization.**

# Future Schlock

## *Predictions on the major newsmakers, snoozemakers and headline takers*

BY GLENN RIFKIN

Out on a limb. Predictions. Predictions. The weatherman predicts seasonal temperatures, partly cloudy. You wear a spring jacket and open-toe shoes. A 10-inch snowfall buries your car.

Look ahead. 1988. What's in store for MIS? What are the headlines in *Computerworld*? Outrageous. "Princess Di leaves Chuck, runs off with Fortune 500 telecom manager." "OS/2E late; sets off major disturbances in Persian Gulf." "Steve Jobs, John Sculley reunite for *Apple: The Movie*."

Let's face it. 1987 had become so boooorrrringgg that the stock market *had* to crash. Look at some of the headlines, for crying out loud. "AIX gives multiuser hue to PS/2." Oooh. Stop the presses! "Amdahl kills Aspen plan, favors Unix." Get me rewrite! Hold page one!

If you liked those, 1988 should be a delight, a day at the beach. So let's get on with it. What will the major stories for '88 be? Who will be the newsmakers? The snoozemakers? What will make you MIS mavens tingle with excitement at the thought of Monday morning and a brand, spanking new issue of *Computerworld*?

**High end becomes low end.** In an unprecedented bit of strategic marketing, IBM declared that the 3090 series was actually a desktop system designed to put mainframe MIPS at the fingertips of corporate end users. In repositioning its product line, IBM insisted that the new strategy would not affect Personal System/2 sales.

"Because OS/2E will probably never really ship, we figure that we can convince MIS to fill its PS/2s with water and glitter and use them as paperweights. The 3090 may take more desk space, but that's really their problem. Think of the margins we get on those suckers," said Bill Go, IBM's vice-president for overpriced systems.

Users contacted by *Computerworld* expressed concern about the new direction but were generally satisfied with IBM's reason for the change.

"The move seems reasonable to me," said Nimbus Wilson, MIS director at Johnson Aircraft and Boat Parts, Inc. in Schenectady, N.Y. "But then again, I bought Displaywriters."


HAL MAYFORTH

Sources inside the company admitted that a delay in implementing the new idea was developing around whether to continue using characters from a canceled TV show to sell the new product. Internal IBM memos indicated that management was torn between featuring an actor dressed as Julius Caesar or Mr. Ed.

In a related development, IBM admitted that the 9370 was actually a hoax. The long-awaited departmental system was revealed as an 8100 in a new cabinet. Insiders revealed that the company, stymied in attempts to fend off Digital Equipment Corp.'s mid-range, decided to rename and repackage the old controversial system and rerelease it.

One user claimed that he caught on to the ruse when he discovered sections of a 1978 *Poughkeepsie Times-Gazette* used for packing material in his first 9370 delivery.

**DEC bites Apple.** Despite months of denial, DEC has purchased an equity stake in Apple Computer, Inc. Under the $1.3 billion deal, which reportedly caused DEC to close a money market account, the Maynard, Mass., giant will assume ownership of 24% of Apple's stock. Under terms of the agreement, DEC will paint sections of its mill headquarters in pastel colors, and Apple will immediately cease its Friday afternoon beer blasts.

DEC President Ken Olsen, in a prepared comment, said, "Let's forget the prepared comments and just ramble a bit. First of all, have I told anyone here about interactive computing? Well, that's what DEC is all about. And so is Apple. We've always been good friends.

"Oh, I guess that Jobs kid was pretty arrogant. But he's gone, so what the hey. We had so much cash that we had to buy something, and, frankly, we don't know how the heck to build a personal computer."

John Sculley, out on the 15th consecutive month of his book tour, was unavailable for comment, but he sent word through his public relations

department that he was actually brought to tears over the deal. "This is insanely great," he said in a prepared statement. "I suppose MIS will have to take us seriously now."

Details of the proposed sales operation were sketchy, but insiders suggested that the two companies would field one huge sales force dressed in dark suits, T-shirts and running shoes.

**Computer Associates buys itself.** Finally running out of acquisition candidates, software conglomerate Computer Associates made business history by initiating a hostile takeover of itself.

The $50-billion giant, having bought out virtually every major software supplier in 1987, found itself without further avenues of conquest, so bored executives decided to instigate what many Wall Street observers believe is a first-of-its-kind self-buy-out.

**Computer Associates declared itself twice as big as it was and notified shareholders it would be known as CA².**

Under terms of the agreement, Computer Associates declared itself twice as big as it was and notified shareholders that it would henceforth be known as CA². Although neither of the Wang brothers were available for comment, it was rumored that Computer Associates executives, all former leaders of Computer Associates acquisitions, plotted the takeover for several months before confronting the Wangs with the idea.

The Wangs reportedly fought the proposal initially but later recanted and decided to lead the takeover effort themselves.

**MIS wants more.** For an unprecedented fifth year in a row, MIS managers stated emphatically that they would like to earn more money. In a *Computerworld* survey of 1,500 MIS professionals, the theme was clear: give us more!

In the survey, a surprising 74% said they wanted a substantial increase in salary, while another 16% indicated they would welcome a "big, fat raise" but could live with a bigger Christmas bonus. The other 10% insisted they were satisfied with their current salaries, but the first 90% accused them of lying.

**IBM unveils the Year of the Customer's Pets.** After achieving little success with its vaunted Year of the Customer campaign, IBM today announced a twist on that strategy. Big Blue unveiled a campaign aimed at the domesticated house pets of its customers. According to a company spokesman, the campaign will focus on creating a closer bond between MIS professionals and their pets.

"We at IBM believe that a person's cat or dog means more to them than these big old mainframes, so we've decided to make that relationship even better through special feline and canine discounts," read the official statement.

An IBM marketing vice-president, who insisted on anonymity, revealed that if the campaign does not succeed, IBM is going to revert to what he called "the Chinese restaurant placemat" campaign starting with the Year of the Goat.

**OSI achieved.** After nearly a decade of promising to conform to the International Standards Organization's Open Systems Interconnect protocols, major vendors agreed that the protocols had all been met and the issue would simply never be mentioned again.

**Industry leaders rock for world peace and high margins.** In an unprecedented gathering of computer industry leaders, the presidents and chief executive officers of virtually every major computer vendor joined together to record a music video in support of world peace. The song entitled "We Are The MIPs" was written by Microsoft Chairman "Dollar" Bill Gates, who sang lead vocals.

Among the prestigious gathering were such luminaries as Jumpin' John Akers and William "Big House" Lowe, Ken "Lightnin' " Olsen, Michael "Baritone" Blumenthal, Jim "Blind Lemon" Manzi, John "Soda Water" Sculley, Steve "Tears on My Pillow" Jobs, Easy Ed Esber, Fiddlin' John Imlay, Philippe "Genghis" Kahn, who played saxophone, and consultant Jammin' James Martin, who played lead guitar.

"It was really an emotional gathering," Blumenthal declared. "I think the song can become a real standard," Manzi added. "I just wish Gates didn't write it."

Proceeds from sales of the record and video are expected to be paltry due to what the recording engineer called "the worst song I've ever heard." But the group was undaunted. "We wanted to let the world know that the slump is over, margins are better and we're all rich as hell," Gates said with a smile.

# WHY 40 OF DEC'S TOP 50 CUSTOMERS DEPEND ON INGRES.


In a word...*performance*. Today's most respected information managers and MIS professionals are investing in Digital VAXclusters as part of their information management solutions. And when they do, they're turning to INGRES to maximize return on investment. They know that INGRES is the only relational DBMS designed to optimize VAXcluster performance. Here's how:

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INGRES harnesses the power in VAXcluster architecture, turning it into a multi-processing database server for hundreds of concurrent users. Through the use of advanced caching, query optimization, and distributed lock management, INGRES gives DEC's top customers the peak cluster performance they need to drive a range of high powered applications as diverse as realtime shop floor control or the daily clearing of billions of dollars in financial transactions. Only INGRES fully leverages their VAXcluster investment by supporting system expansion for years to come. Whenever additional capacity is required, they can simply plug another INGRES node into their cluster.

## Production systems tolerant to a fault.

When it comes to reliability, the DEC Top 40 count on INGRES for data/transaction integrity and fault-tolerant DBMS operation. Even if a node goes down, other cluster users go right on processing; INGRES automatically keeps the database consistent. INGRES takes full advantage of DEC features like disk shadowing to guarantee production systems are up and running when they're needed.

## Award-winning 4GL development tools.

Now you can achieve the order-of-magnitude increases in development productivity enjoyed by DEC's top customers. INGRES makes it easy to prototype applications, then implement across the desired operating environments. INGRES even protects investments in earlier generation language programs. A rich set of host language interfaces makes it possible to tie existing programs to INGRES applications as you build them.

With so much going for it, plus support and service that sets an industry standard all by itself, it's no wonder so many top DEC customers like GE, Kodak, and Citicorp depend on INGRES. To find out how to put INGRES solutions to work in your VAXcluster, just send in the coupon and we'll mail you a free information-packed report entitled "Maximizing Vaxcluster Productivity with INGRES." Or for even faster action, call 1-800-4-INGRES.

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SOFT TALK

*Charles Babcock*

## SAA strategic software step

A few years ago, the general manager of IBM's site in Endicott, N.Y., was commenting on the nature of his job to the hometown newspaper.

One of the revealing things he said was that the development side of the site, the Glendale lab, functioned in competition with other IBM development sites. There had once been a move to phase out the Glendale site, but the staff kept coming up with so many compelling products that the advocates of trimming and development concentration never succeeded in getting it closed.

What emerged was a picture of IBM as a series of competing divisions and competing sites within a division, rather than a monolithic company. That decentralization had a lot to do with IBM's success in the 1960s and 1970s, but it has come back to haunt the firm in the '80s.

The incompatibility of IBM's mid-range computers is the most commonly cited example, but incompatibility among software products, or "software pollution," as Michael Braude of the Gartner Group puts it, is equally compelling.

"The following overlaps or conflicts have become institutionalized: CICS vs. IMS, IMS vs. DB2, CMS vs. TSO, JES2 vs. JES3. . . . Users are unnerved. We receive constant questions

*Continued on page 94*

# Referential integrity for DB2?

***Consultant claims new release of DBMS allows cross-checking of keys***

BY CHARLES BABCOCK
CW STAFF

WHITE PLAINS, N.Y. — The next release of IBM's DB2 will include a limited form of referential integrity, according to Shaku Atre of Atre International Consultants, Inc. in Rye, N.Y.

DB2 Release 4.0, expected out in the spring or early summer, reportedly will include a form of referential integrity that allows the cross-checking of primary and foreign keys. For example, DB2 could enforce an integrity rule that would forbid the deletion of any customer name from one table if the customer has an outstanding account in another table, Atre said.

She described what she expects in Release 4.0 as "content integrity," or an ability to enforce integrity rules across the rows and columns of a table. She said DB2 users will have to wait several years for a more sophisticated form of referential integrity that would govern domains.

With domain integrity, a data base administrator could direct DB2 to review all figures submitted to a salary table and reject any that did not fall within a $15,000 to $150,000 range or some similar set of parameters, Atre said.

### 'Don't believe it'

Gary P. James, senior manager and technical director in the advanced technology and integration group at Arthur Andersen & Co. in Chicago, said he doubts that IBM will be able to include referential integrity, in any form, in Release 4.0.

"Off the top of my head, I don't believe it will be in there," he said. But Atre said she has been informed by well-placed IBM employees that the feature will be included.

Both James and Atre noted that IBM is under pressure from major customers to incorporate referential integrity into the relational data base management system because they have grown accustomed to its protections in IBM's IMS and other traditional DBMS offerings. As users push DB2 applications into production use, they become increasingly concerned about reliability issues, James said.

### Slowdown in pace

In addition, Atre noted that DB2 is expected to reach 2,000 installations by April or May. That number reflects a slowdown in the rapid pace of sales that occurred over the previous 12-month period.

Atre said IBM is trying to enhance DB2 for production use, improving its reliability rather than attempting to implement all phases of relational technology as quickly as possible.

IBM will offer improved utilities in the next release, including a utility to do group authorizations of access to the data base and group revocations, Atre said. Currently, DB2 administrators are limited to authorizing and revoking access on an individual basis.

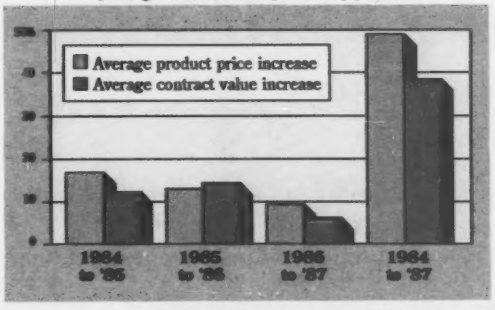
James said DB2 users are getting impatient for the ability to do outer joins or to combine files on the basis of foreign keys as well as primary keys. They also want to update views of the data base or a logical table derived from two or more existing tables. The way DB2 works now, an update must go back to the underlying base tables of a view to do an update — a cumbersome process compared with updating the view itself, James said.

Atre said she thinks the ability to update views will be included in Release 4.0.

## Data View

### The fine print

***Survey of software vendors indicates contract values, or total sales orders, have outstripped product price increases, reflecting services and complementary products***




INFORMATION PROVIDED BY CULPEPPER AND ASSOCIATES, INC.

# 4GL fuses flexibility of 3GLs

BY NELL MARGOLIS
CW STAFF

GLENDALE, Calif. — Progeni Systems, Inc. staged a mid-December debut for Filetab-D, a fourth-generation systems development package that the firm claimed combines the efficiency of a fourth-generation language with the comprehensiveness and flexibility of third-generation languages.

The 'D' stands for Digital; Filetab-D, for which Progeni is the U.S. distributor, is the first Digital Equipment Corp.-based entry from 21-year-old British software manufacturer National Computing Centre Ltd. According to Chris Stanford, National Computing Centre's software group director, the product was designed to bridge the programming language generation gap.

"Fourth-generation languages [traditionally] are quite efficient — but at a cost," Stanford said. Productivity gains often are eroded by shortfalls in completeness and continuity.

Filetab-D, a compiled language, offers the payoff without the trade-offs, said Judy Manz, a Progeni customer support consultant. A decision table-based programming language with built-in automatic report-generating ability, Filetab-D yields understandable code that is easy to maintain and modify, Manz said.

The language can read and write to all DEC RMS files — a particular boon to users who need to convert old files. Filetab-D also interfaces with both DEC's hierarchical data base management system, DBMS,

*Continued on page 94*

# The new IBM 9750 Business Communications System.

For everybody who wants more flexible computer networks, IBM has an answer: more flexible *telephone* networks. Even better, we've made them a reality.

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Even if you use it for voice only, the IBM 9751 CBX will keep you years ahead. It's one of the most expandable systems in the industry, able to serve from 100 to 20,000 lines. So as you

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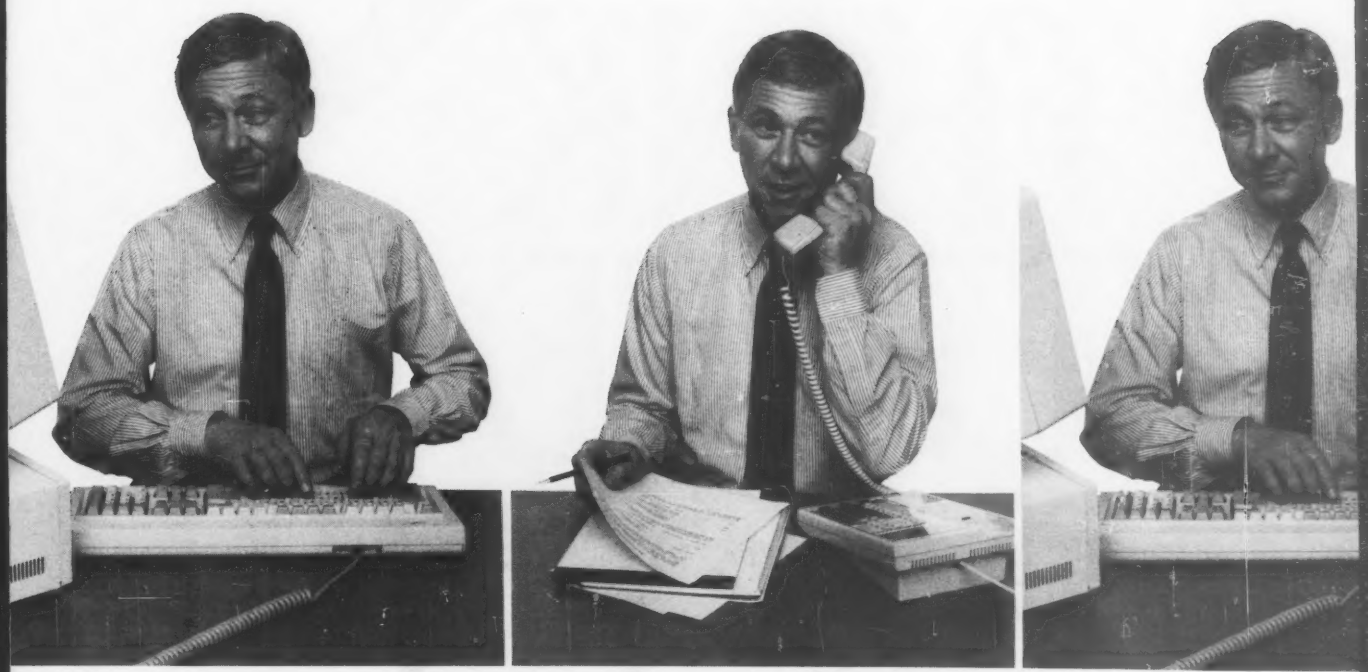

grow, it grows. Yet it's much smaller than its predecessor, the ROLM CBX II, and it's easier on power and air conditioning.

On the other hand, its traffic-carrying capacity is tremendous. The 9751 can be configured so it's virtually impossible to block.

And its 9000AE (for Advanced Engine) processor not only gives you every digital advantage (like ROLM PhoneMail® and Least Cost Routing), it has reserve power to handle these applications under heavy use and to let you add new applications as you need them.

When ISDN standards are established, the IBM 9751 will be able to work with them. It was built with ISDN in mind, to provide both the power and bandwidth that ISDN usage (for voice, data and image) will demand.

In fact, the 9750 Business Communications System is a key part of IBM's telecommunications future. Combined with all of IBM's other ways to connect systems, it gives you new freedom to run things your way, to broaden the usefulness of your networks, and to control their expense. To learn more, call your IBM ROLM Systems representative or Authorized ROLM Distributor.

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## Babcock

FROM PAGE 91

and conjectures about product convergence and demise," Braude writes in a Gartner Group strategic report, "Systems Application Architecture: A Critical Analysis."

Screen handling with one IBM product is functionally different from the next. Interactive test facilities vary from CICS to IMS to IBM Cross System Product and Cobol, he adds.

By naming a set of interfaces, protocols, programming languages and other software conventions, IBM hopes to redirect its own efforts and those of third-party vendors onto narrower, more compatible ground. Braude says software pollution inhibits customer growth and gives users a reason to look at alternative vendors. IBM is fighting back with a statement of direction and a proposed solution, but ones that still have a long way to evolve.

One of the reasons IBM came up with its announcement on SAA is support for customer growth horizontally. Much of what IBM does encourages vertical growth — that is, expansion of the glass house, the corporate data processing department using IBM 370 mainframes and DOS/VSE or MVS.

The major growth area of the '80s, however, has been the information center and other forms of end-user computing, with an emphasis on personal computers, mid-range machines, IBM's VM and more powerful workstations.

A major reason for IBM's stance with SAA is that it will provide better support for applications that move across these horizontal platforms. It will also allow users, once they gain familiarity with one IBM interface, to use it with additional products. And SAA promises to leverage skills devoted to software development, a key asset in the modern corporation, by making them applicable across several operating environments, Braude writes.

While users can applaud all of these goals, there is little in SAA that immediately brings us closer to users' goals. SAA is a gathering of designated software products, something like the eclectic collection of shiny objects by a crow or pack rat. To call this collection an architecture is stretching the point, although, as Braude says, "SAA is a strategy . . . and IBM must be awarded its due for surfacing a software strategy."

What SAA does is focus resources, both inside and outside IBM, on certain software environments, which high-level interfaces may one day bring together. With SAA, IBM is cutting its losses, but it has yet to achieve a grand design.

But, as Braude says, SAA is a first step. "If IBM sustains these initiatives, we believe it will achieve a large net gain in software effectiveness," he says.

**Babcock is *Computerworld's* senior editor, software & services.**



## 4GL

FROM PAGE 91

and Oracle Corp.'s relational SQL-based Oracle DBMS; an interface to DEC's relational SQL-based VAX RDB/VMS is promised for an early 1988 delivery.

Vadim Computer Management Group Ltd. in Kelowna, British Columbia, used Filetab-D to migrate its business applications software, which was written in Basic, to the VAX. "It's a lot like C in terms of power and flexibility," said Vadim President Mike Schleppe, whose company also found that "using Filetab-D, we could reduce our program size by 40% to 50%. The programs ran faster, too, and we were able to eliminate a majority of the sorts," he added.

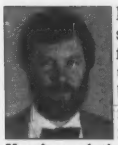
However, Schleppe said Vadim found that utilities were lacking in Filetab-D — a deficit Vadim has now corrected. The Programmers Toolkit, a Vadim-designed set of utility programs aimed at guiding a new user into Filetab-D, is being marketed by Progeni.

Available immediately on DEC's VAX/VMS and PDP systems, Filetab-D is priced from $8,000 to $52,000, depending on the CPU size.

SMALL TALK

*William Zachmann*

## See to shining C



If I were responsible for information systems in a business organization today, my first New Year's resolution would be to use the C programming language for new application development.

While frequently associated with Unix, C is no more necessarily linked to Unix than Microsoft and IBM's OS/2 is to the latter's Personal System/2. In fact, C can be used on virtually every hardware system and operating system environment that will matter in the next few years.

C is also the language of choice for OS/2 software, whether by software vendors or by the growing number of users that are starting to build serious applications on personal computer- and other microprocessor-based platforms. An inherently structured language, C makes languages like Cobol and Fortran look as obsolete as the Model T Ford.

Granted, there *is* a real business value in sticking to the devil you know. So we are going to continue using Cobol, Fortran and Basic. Nevertheless, for us

*Continued on page 96*

# Those thrilling accounting tools

*State of the Art's Samuels says Big Eight input has stifled the yawns*

David Samuels knows that getting the industry excited about accounting software is like trying to get an 8-year-old excited about spinach. But Samuels, president and chief executive officer of State of the Art, Inc., believes that accounting software's day in the sun is coming soon.

One reason for Samuels' optimism is the growing involvement of the Big Eight accounting firms — along with many regional accounting companies — in supporting and selling accounting software to corporations. Samuels attributes his firm's rise to among the top two or three accounting software vendors to its association with some 1,650 certified public accountants.

Samuels recently spoke with

David Samuels

Senior Editor Ed Scannell about the current state of the accounting software market and what the future holds.

**What is the biggest misconception users have about accounting software?**

The biggest misconception is that it is too difficult to learn and operate. There is a fear factor that's not premised on computerized accounting but on the accounting function in general. Many users don't understand the internal accounting function. Their fear is that they aren't organized enough to move into the computerized process, and they are hesitant to make the change until they are.

**How can vendors allay these fears?**

What we are trying to do is incorporate the public accounting profession into this whole process. We advise end users to work closely with their accounting firms to organize their internal accounting first and foremost, then have their accountants clearly understand our software, so that the process of going from an organized manual system to a well-disciplined computerized one is made easy by the professional whose business is accounting.

**Has the way accounting software has been distributed held it back?**

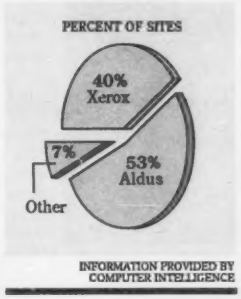
Absolutely. Accounting software has been predominantly retail-distributed since 1977. Those that have been charged with the responsibility of selling the applications have not had an understanding of internal accounting and have never been properly trained. Also, accounting software has never been a sexy segment of the software industry.

*Continued on page 96*

## Data View

Desktop publishing software

*Supplier market share in Fortune 1,000*




INFORMATION PROVIDED BY COMPUTER INTELLIGENCE

# Business Benchmark finds Xenix cruising past OS/2

BY ALAN J. RYAN
CW STAFF

CHICAGO — IBM's OS/2 Release 1.0 may run up to seven times slower than Microsoft Corp.'s Xenix, according to tests by an independent software house last week.

In tests conducted by Neal Nelson & Associates involving 17 types of work and up to 20 concurrent tasks, Microsoft's Xenix — which is The Santa Cruz Operation, Inc.'s Unix Release 5.2.2 with an Intel Corp. 80386 kernel and an 80386 compiler — was faster in 13 cases, with a maximum 700% difference. OS/2 was faster in three cases, with a maximum 85% difference, the firm said.

OS/2, IBM's first multitasking operating system, was jointly developed by IBM and Microsoft and was shipped by IBM Dec. 4.

The tests were conducted using Neal Nelson's Business Benchmark, a multitasking throughput program that measures how a computer slows down under an increasing work load. The tests were conducted on a 2,048K-byte, 16-MHz IBM Personal System/2 Model 80 with a 70M-byte enhanced small device interface disk.

The benchmarking software reportedly measured the computer on different types of work, including both calculation- and disk-intensive tasks. Business Benchmark, available now, prepares a report that shows the relative speed of any two computers in each of the categories through a range of one to 100 simultaneous tasks.

One test compared OS/2 and Xenix for a task that included 16- and 32-bit integer math, function calls, loops and sequential and random disk I/O. OS/2

*Continued on page 96*

# Accounting tools

CONTINUED FROM PAGE 95

Our products have never received the proper industry attention.

**Why?**
It is a much harder topic to understand. We are not talking about a single-module spreadsheet application. We are talking about 10- to 13-module integrated accounting systems, where each individual application within that library has hundreds and hundreds of technical accounting capabilities.

**What will it take for accounting software to gain more visibility?**
For the first time in 10 years, accounting [software] is reaching new levels of visibility. The bottom line is that the pricing is still relatively affordable and the engines [of today's microcomputers] are now powerful enough to support very intensive accounting applications. Also, general economic factors throughout the U.S. have compelled managers to be more attentive to their accounting systems and use accounting information to better manage their businesses.

**What have low-cost packages from firms like DAC Software, Inc. done to increase demand?**
What DAC has done to stimulate not necessarily demand, but sales, is to sell complete accounting systems for $69. With regard to DAC and the other low-end products, a counterpart of mine a couple of years ago said buying accounting software is like buying gum at the end of the candy counter. When you offer a seven-application package for $69, you haven't created demand, you have created a low-cost option for people to take a look at.

**How is accounting software being used in corporations today?**
In a Fortune 500 company, you see microcomputers doing departmental accounting with microcomputer-based application software. As you come down from Fortune 500s into the bulk of corporate America, these types of microcomputer applications are responsible for their internal accounting systems.

# Xenix

CONTINUED FROM PAGE 95

showed more degradation, as the multitasking activity increased, than did Xenix. Differences ranged from 300% to 600%, with OS/2 always running more slowly than Xenix, according to the firm.

Another test compared the operating systems in a task performing 100,000 calculations with 64-bit double-precision floating-point numbers. Here, OS/2 was faster, with differences ranging from 40% to 50%, the company said.

The benchmark tests involved word processing, electronic mail, spreadsheet, accounting, data base management and programming.



# Zachmann

CONTINUED FROM PAGE 95

old dogs who are willing to learn a few new tricks, much better languages that provide substantial productivity improvements are readily available.

And while you can make a case for alternatives like Pascal, C has some obvious benefits, not the least of which is its inclusion by IBM into Systems Application Architecture (SAA). For information systems professionals working in IBM shops, the mere fact that C carries the SAA blessing and Pascal doesn't is more than enough to carry the day.

The problem, of course, is how to learn the new trick. If your mental model of programming absolutely requires a DATA DIVISION or FORMAT statement, starting to look at things differently can be a real problem. After all, what self-respecting information systems professional wants to be reduced to the status of junior programmer by learning a new language?

**Private lessons**
Still, the rewards for doing so are enormously compelling. But how do you go about it? Buying a terrific C compiler for personal computers like Borland's Turbo C or Microsoft's Quick C and slogging through the manual will work for some. Great books like those published by Microsoft Press can help too. But for a lot of us, private instruction makes the most sense.

Well, if you promise not to tell anyone, I'll let you in on where I am getting some of that valuable instruction. It is from The C Workshop, an extremely well-done instructional package available from Oakland, Calif.-based Wordcraft for $69.95.

The package includes a Kernihan and Ritchie Standard C compiler, a convenient text editor, on-line tutorial, book and exercises.

Yup. If I were running information systems in a big organization, I think I'd offer a free copy of The C Workshop to anybody on my staff who wanted one and encourage them to learn C. Then I'd be certain to have a newly refurbished and remotivated core of professionals in my organization, ready and eager to build major applications using less costly micro million instructions per second (MIPS) instead of the high-priced MIPS my competitors still rely on.

Zachmann is vice-president of research at International Data Corp.

DATA STREAM

*Elisabeth Horwitt*

## Don't open until . . . ?

What many MIS managers would have liked to see under their Christmas trees this year were real, installable products to help them link their multivendor computing and communications resources into a single, integrated enterprisewide network.

Instead, they got a lot of mysterious packages with tags that read, "Don't open until October 1988," as well as assemble-it-yourself kits with several pieces missing.

Take the Integrated Services Digital Network (ISDN) standard — please. Site trial activity abounded last year, but all it really proved was that existing services can run over ISDN links. Still missing are commercial applications that will convince users to replace their existing lines with ISDN services.

Currently, the industry seems to be trapped in a vicious circle, with service vendors like AT&T and the Bell operating companies saying they don't want to leap into ISDN until there is enough ISDN equipment on the market, while private branch exchange and T1 vendors are holding back on ISDN support until the services are there.

It does not bode well that AT&T reportedly has delayed introduction of its Primary Rate Interface service until the

*Continued on page 98*

# Making tracks to automate

*Railway-developed system monitors inventories, speeds yard operations*

BY PATRICIA KEEFE
CW STAFF

JACKSONVILLE, Fla. — It's 1 p.m. Do you know where 12 railroad cars filled with machine parts are? Despite varying degrees of automation, some rail companies would not be able to answer that question either accurately or with any great speed.

Not so at CSX Rail Transport, a $13 billion transportation company. The Richmond, Va., firm had the vision to create a high-technology division that developed information processing and networking tools to manage and monitor its operations with far more efficiency.

Led by Bruce Freeman, CSX's high-tech Casey Jones, the division built a custom-designed Terminal Yard Management System (TYMS), a completely automated railcar inventory and management system that speeds rail yard operations — the nucleus of every railroad. One key element of this system is a sophisticated network that provides efficient tracking of cars and goods within the terminal yard labyrinth by quickly communicating accurate information to the railroad switchmen.

**The heart of the system**

At the heart of CSX's 22,000-route-mile rail network, the TYMS operates on dedicated communications links to an IBM 3090 Model 400 host in an MVS/XA environment. Printers, CRTs and Rabbit Software Corp.'s CTI 5000 controllers are hung off a mix of leased multidrop lines and microwave installations throughout CSX rail yard properties. The TYMS keeps switching crews and equipment operating by providing scheduling instructions from numerous remote printer locations deep within the company's rail or switching yards.

Automation was not a new idea at CSX, but the old system lacked a yard-management function with an integrated data base philosophy. Facsimile machines and stand-alone computing provided some relief by automating information about switching assignments, but this equipment was considered little more than an interim solution. The new TYMS needed to integrate all of the company's transportation systems for data sharing purposes.

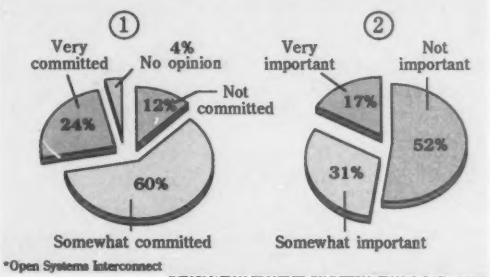
In order for the system to be used as an in-route planning tool, it had to provide data efficiently to the remote boxes deep in the yards. To accomplish this, the

*Continued on page 99*

## Data View

Users evaluate
(1) IBM's commitment to OSI* and
(2) the standard's importance to their firms

*Levels of commitment appear to be well matched, based on a survey of 107 IBM Systems Network Architecture customer sites*




*Open Systems Interconnect

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

IBM NET MANAGEMENT

## VAX linked to Netview

**Systems Strategies, Inc.** has announced IBM Netview support for its VAX Link software family, which provides communications between Digital Equipment Corp. VAXs and IBM mainframes.

VAX Link is the first IBM-to-DEC connectivity software to support IBM's centralized network management system, according to Systems Strategies. Any of three new software packages from the New York-based software firm will make a VAX or Microvax appear as a device on an IBM Systems Network Ar-

*Continued on page 99*

# Host links undercut IBM 3737

BY ELISABETH HORWITT
CW STAFF

MINNEAPOLIS — Computer Network Technology Corp. (CNT) has aimed two channel-based host networking products directly at IBM's channel-to-channel product line.

Channelink 5137 provides remote channel-based communications links for one or two hosts at speeds of up to 3M byte/sec., CNT said. The 5137 can handle up to six remote full-duplex links, each of which can support transmission rates of up to 4M bit/sec., according to the vendor.

In contrast, IBM's 3737 can only attach to one mainframe channel locally and provides remote communications with another 3737-equipped mainframe over a single 1.5M bit/sec. T1 link.

The 5137 is said to be able to handle up to 256 concurrent logical application connections between multiple mainframes. It supports T1 and international CEPT industry standards. The device is said to be plug-compatible with IBM's 3737 and support IBM's VTAM channel-to-channel program, so that VTAM applications can run unchanged over a 5137-based network.

Pricing for a 5137 supporting one IBM channel and two high-speed serial links is $45,000, while a 5137 with two IBM channels and two links costs $58,000.

Costs for the 5137-based networks are between 30% and 80% of the cost of a comparable 3737 configuration, CNT claimed. The base price for a

*Continued on page 98*

# Horwitt

CONTINUED FROM PAGE 97

second quarter.

One hopeful sign for 1988 is the formation of an organization whose goal is to foster user input into vendors' decisions about which ISDN applications and products to develop first.

**Telecom circus**

The ISDN hoopla reflects the fact that many heavy hitters have focused their energies on telecommunications. Companies like DEC, IBM and AT&T are racing to extend their network management systems into the telecom world.

IBM has its Netview campaign, and AT&T has Unified Network Management Architecture. DEC, meanwhile, is trying to get PBX vendors to support its Computer Integrated Telephony program and should be announcing its universal network management system early in 1988. As with the ISDN effort, the telecommunications drive is partly an honest attempt to meet the corporations' multivendor networking needs.

These "architectures" and "programs" are still far from providing solid commercial solutions, however. Even IBM's Netview, the furthest along of the management systems, is missing many pieces, particularly for multivendor systems. And both AT&T and DEC's offerings are still on the drawing boards.

**Sterile marriages?**

MIS managers in a hurry to integrate their multivendor computing and communications resources have looked hopefully at network-oriented matings that started in 1986 and continued through 1987.

Last year, Unisys agreed to acquire Timeplex; Digital Communications Associates acquired network software firm Fox Research (and wooed but lost Ungermann-Bass), and 3Com married Bridge Communications. Also, IBM and Network Equipment Technologies (NET) entered a joint development agreement that could eventually lead to NET's acquisition, sources predict.

The IBM-NET venture, and possibly the Unisys-Timeplex union, should provide intelligent integration of host and T1 networking. 3Com's strengths in IBM Personal Computer networking complement Bridge's multivendor networking thrust, which is based on Transmission Control Protocol/Internet Protocol (TCP/IP) and Open Systems Interconnect (OSI) protocols.

But it may take a while before we see the fruits of these unions. It certainly has taken a long time to see marriages from earlier years produce anything beyond low-level links between their respective systems.

**OSI: where's the beef?**

OSI has perhaps the feeblest excuse for not achieving more solidity in 1987, since the standard has been in the works for close to a decade. Unfortunately, OSI efforts are still bogged down in the upper layers: Support of the X.400 electronic mail specifications, for example, has been lackadaisical, particularly among service vendors. Other major missing pieces are OSI network management protocols, which will not be ready for at least another couple of years.

Manufacturing Automation Protocol (MAP), an OSI offshoot geared to the factory floor, lost some of its impetus while users and vendors awaited the arrival of Version 3.0 of the specifications. The floodgates should be opened in June with the Enterprise Network demonstration of multivendor interoperability under Versions 3.0 of MAP and its office-oriented sibling, Technical Office Protocol.

Meanwhile, TCP/IP shows no sign of graciously disappearing in favor of OSI. Indeed, vendors have been working together to resolve the de facto standard's long-standing interoperability problems.

This past year has seen a rash of announcements extending the protocol's support to new systems — including IBM's 9370 mid-range system. Maybe that's why the same users who said in a recent survey that they plan to support OSI also said they plan to expand their TCP/IP networks.

**OSI HAS PERHAPS the feeblest excuse for not achieving more solidity in 1987, since the standard has been in the works for close to a decade.**

Horwitt is a *Computerworld* senior editor, networking.

# Host links

CONTINUED FROM PAGE 97

3737 is $72,000, and multiple 3737s must be used to channel-attach multiple hosts.

The Channelink 5188 is said to support simultaneous full-duplex channel-to-channel communications between multiple IBM hosts over local links. Featuring a multiprocessor architecture and 10M bytes of buffer storage, the device can handle between two and eight IBM host channels, CNT said. The 5188 is base-priced at $27,000 for a two-channel host-to-host configuration. In contrast, IBM's 3088 is base-priced at $50,000. Both the 5137 and 5188 are available immediately.

# Datability eases PC-VAX retrieval

NEW YORK — Micro-to-mainframe software introduced recently by Datability Software Systems, Inc. is said to make it easier for IBM Personal Computer users to save and retrieve files on a Digital Equipment Corp. VAX-based server.

Remote Access Facility File Access and Control Software (RAF-FACS) embeds itself in popular IBM PC software packages. When a user keys in a request to store or retrieve a file, a screen automatically pops up with a variety of options for locating or storing a document.

System administrators can customize the parameters of the application screen, designating which fields can be used for sorting and retrieving or for storing a document for later retrieval. Documents can be retrieved by company name, project name, security group or key word, according to a Datability representative.

RAF-FACS is provided as an upgrade to Datability's Remote Access Facility, a PC-to-VAX communications software package that is said to allow PCs to maintain up to 14 virtual disks on a VAX. It supports Lotus Development Corp.'s 1-2-3 and Wordperfect Corp.'s word processing software and will be expanded to support others, the company said.

The software is available now and costs $495 for the first 50 copies.

# Netview

CONTINUED FROM PAGE 97

chitecture (SNA) network, allowing it to be monitored by an IBM host running Netview, the vendor said. VAX Link will support the Netview/PC interface sometime in the future, according to Systems Strategies.

These following are the three VAX Link programs:

- VAX Link/SNA 3270, which provides DEC systems with on-line access to an IBM host.
- VAX Link/SNA RJE, for batch file transfers between DEC and IBM hosts.
- VAX Link/APPC, which supports peer-to-peer communications using LU6.2, IBM's SNA networking protocol.

**BGS Systems, Inc.** of Waltham, Mass., has introduced a facility said to collect performance data from SNA software and hardware monitors, passing it directly into BGS's Bestnet Network Performance Management System.

Bestnet Gateway allows MIS managers to collect network data from multiple sources for an overall picture of network performance, the company said. The gateway is said to support non-IBM as well as IBM data sources.

Emcom Corp. and Duquesne Systems, Inc. have entered into an agreement with BGS to develop software components that will pass performance-measurement data through Bestnet Gateway.

The Emcom component will allow the company's NCS 70 users automatically to access and utilize line data for building circuit modeling scenarios. The Duquesne component will provide a similar link for that company's Netspy system.



# Tracks

CONTINUED FROM PAGE 97

facsimile machines in the remote boxes were replaced with printers for easier maintenance and to provide printer alarm/monitoring capabilities. Next, the remote printers needed to be linked back to a wide variety of modems, CRTs, office printers and an IBM 3090 mainframe.

"That was a big enough challenge in itself," Freeman said. "But we had more concerns because we had to provide dial backup. We were adding printers in locations where we did not currently have communications facilities, and we needed to support some means to monitor the status of these remote peripherals."

His solution lay in Rabbit's CTI 5000 workstation controllers, which support RS-232 twisted-pair-based printers using limited-distance modems. The CTI 5000 sounds an alarm when any remote printer is down. A visual signal also occurs on the control panel, indicating the printer port that requires attention.

These monitoring features were crucial for CSX. When crews do not receive switching instructions, negative events mushroom quickly, translating into missed schedules and a breakdown in the level of delivery service that can erode customer satisfaction and cost millions of dollars. The controllers also enable the TYMS to intermix connections for coax terminal and printers, ASCII terminals, printers and modems.

Today, CSX's rail system is made up of 126 major rail yards, or terminals, located in 99 U.S. cities. Currently, 30 rail yards are operating under the company's state-of-the-art TYMS, with each yard using a minimum of two CTI 5000 controllers. Freeman said crews are bringing the balance of CSX's rail yards into the TYMS environment at the rate of between two and six yards per month. Accelerated estimates forecast completion of a system-wide TYMS at all 126 CSX rail yards by the end of 1988.

Initiated in January 1985, the TYMS project has three phases. Today, Phase One — the base switching package — is operational. Phases Two and Three will provide enhancements and interfaces between the TYMS and the company's process control computers at its major switching yards.

For everyone who ever wanted a single source for all their S/3X needs, Decision Data has good news. We are now that single source.

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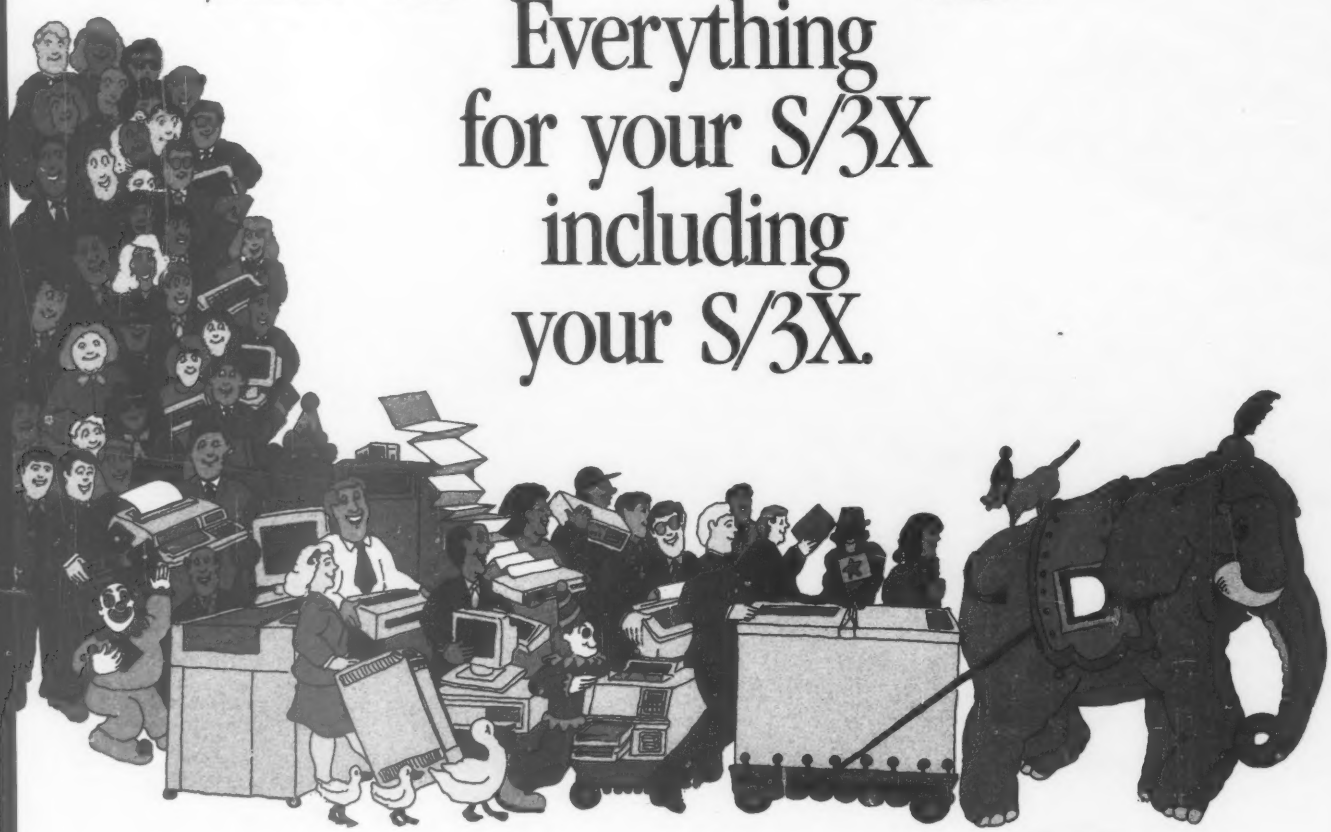

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A Decision Industries Company
400 Horsham Road
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HARD TALK

*Stanley Gibson*

# Technology marches on

Those who believe that after 40 years, computing is reaching middle age had better reconsider. Presentations at the recent First Boston technology conference show that progress is not slowing up a bit — all signs are that computers will get steadily more powerful and less expensive well into the next century.

The three-day gathering in Boston showcased some 90 high technology firms, from obscure start-ups to IBM.

One field that continues to attract investors' attention is the near-supercomputer market, which has been fertile start-up territory for the past few years. That niche, already somewhat loosely defined, is expanding both upward and downward.

Saxpy Computer claims its "matrix supercomputer," which will ship in the first quarter of 1988, will offer performance above that of a supercomputer. Its price will be in the departmental computer range, the vendor says, despite its embedded departmental computer, a DEC VAX. It sounds like either the supercomputer or the VAX is being thrown in free.

*Continued on page 102*

# Wang takes promised first step

*High-end dual-CPU VS 7320 gives users 1.9 times more performance*

BY JAMES CONNOLLY
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. is taking its long-promised first step into multiprocessing with a high-end dual-CPU VS 7320 minicomputer.

The introduction, which was scheduled for Dec. 28, is intended to provide Wang VS 7310 users with a growth path to a system that offers 1.9 times more performance. The vendor had promised the VS 7320 would be announced by the end of 1987 when the VS 7310, a uniprocessor with room for a second CPU, was introduced in January 1987.

The VS 7320 features tight coupling and symmetrical processing, under which both CPUs run tasks autonomously while sharing memory and other system resources. Wang claimed the VS 7320 can perform up to 255 concurrent tasks and support 192 workstations, which is the architectural limit of the VS operating system.

Gerry Paul, vice-president for systems in Wang's research and development group, said that despite the increased performance, Wang is focusing the VS 7320 on commercial processing rather than the technical arena.

"Number one, we see it being used by our existing users who are growing their applications and growing their number of users and, number two, new customers who need a machine of this power," Paul said.

**Truly symmetrical**

Paul said the VS 7320 is a true symmetrical system in which both CPUs can run the operating system and applications and in which neither CPU acts as a master in assigning tasks.

Wang said the El Paso Natural Gas Co. in El Paso, Texas, recently began the first field tests on the VS 7320. Officials for the gas company said they chose the system for its ability to handle large numbers of CPU-intensive calculations in a gas well accounting application. General availability is scheduled for third-quarter 1988.

The VS 7320 can be configured with 16M or 32M bytes of memory and with 32K bytes of cache memory per CPU. Prices start at $350,000, with the 32M-byte model costing $390,000. A VS 7310-to-VS 7320 upgrade costs $125,000.

Wang declined to rate the VS 7320 in millions of instructions per second (MIPS). However, if the VS 7320 proves to be 1.9 times more powerful than the VS 7310, it would be rated at about 6.4 MIPS, based on Wang's performance claims.

## DataView

### Most fitting

*Users say NCR Tower is most often the correct minicomputer in minicomputer vendors' original proposals*

| Proposed configuration adequate | Percent of sites |
|---|---|
| NCR Tower | 94 |
| Concurrent Computer Series 3200 | 92 |
| AT&T 3B5/15/20 | 92 |
| Honeywell DPS 6 | 92 |
| DEC PDP-11 | 91 |
| IBM System/36 | 91 |
| **Proposed configuration too large** | |
| MAI Basic Four | 10 |
| DEC Microvax | 9 |
| Hewlett-Packard HP 1000 | 6 |
| Harris H Series | 5 |
| **Proposed configuration too small** | |
| Apollo Domain Systems | 50 |
| DEC VAX 8600, 8650 | 29 |
| IBM System/38 | 23 |
| Unisys System 80 | 20 |

INFORMATION PROVIDED BY DATAPRO RESEARCH CORP.
CW CHART

# CSPI offers VMEbus processor

BILLERICA, Mass. — CSP, Inc. (CSPI) recently expanded its focus from offering array processors for Digital Equipment Corp. systems to offering those array processors for use with Motorola, Inc. VMEbus-based systems.

CSPI's Quickcard is a single-board array processor that performs 32 million floating point operations per second (MFLOPS). Quickcard features seamless programming for VMEbus-based systems in the Fortran-77 and C languages.

The company's previous product, the Mini-Map array processor, was designed for use with DEC PDP-11, VAX and Microvax systems.

**Target audience**

CSPI said it expects the VMEbus-based Quickcard to be targeted at areas such as seismic processing, medical imaging, beam forming and real-time signal processing.

Each dual-height, dual-depth Quickcard is available with 128K or 512K bytes of memory, the vendor said.

Up to four Quickcards can plug into the VMEbus card cage to provide up to 2M bytes of memory and 128 MFLOPS. Quickcard is dual-ported to permit concurrent I/O and processing.

Quickcard for VMEbus-based systems costs $9,500.

# Cumulus terminal digs at Hewlett-Packard user lode

*HCT display emulates HP's 2392/A, 2394/A and is compatible with 700/90 series*

PALO ALTO, Calif. — Cumulus Technology Corp. targeted the Hewlett-Packard Co. user community last month with a 15-in. diagonal alphanumeric display terminal.

The HCT display emulates HP's 2392/A and 2394/A terminals and is compatible with HP's 700/90 series of terminals. According to a company spokesman, it is suitable for block-mode and forms-cache applications.

The terminal features a paper-white flat-display screen, a 13- by 16-char. matrix and a 75Hz refresh rate that virtually eliminates flicker, according to the spokesman.

Other features include 80- or 132-col. display, dynamic focusing for avoiding distortion near the edges of the screen image, dual printer ports, built-in tilt-and-swivel and an HP 2394 A-compatible keyboard.

**Desktop features built in**

Also provided are built-in desktop accessories, including a calculator, calendar, personal file system, notepad and on-line Help. Eight pages of nonvolatile memory and 16K bytes of display memory are standard.

According to the spokesman, display performance is enhanced by the use of very-large scale integration technology that reduces heat and power consumption and requires fewer parts than HP terminals. A sleep mode automatically shuts down the terminal's circuitry after it has been inactive for a period of time, he said.

Cumulus's HCT display terminal, which is priced at $795 and is available now, comes with a limited five-year warranty.



# NCR ITX adds compact disk

DAYTON, Ohio — NCR Corp. recently added a compact disk subsystem for use with its ITX series of mid-range systems.

The NCR 6092 subsystem, including the disk controller, one or two disks and all internal cables, was designed to fit in a cabinet that measures 13½ by 19½ by 5 in.

Intended for use with the NCR 9300IP, 9400IP and 9500 systems, the NCR 6092 is available with 133.7M or 267.4M bytes of formatted storage, officials said.

Available now, the single-disk 133.7M-byte model costs $8,205. The two-disk 267.4M-byte model costs $11,900.

# Gibson

CONTINUED FROM PAGE 101

Stellar Computer will soon announce a graphics supercomputer in workstation form, or what it calls a "personal supercomputer." The processor will do 25 to 30 million instructions per second, 40 million floating-point operations per seciond and have 100M bytes of memory, the vendor claims.

Others, such as Multiflow Computer and Scientific Computer Systems, are aiming for the more traditional near-supercomputer, or "Crayette," market.

**No competition in sight?**

As is to be expected, the entrepreneurs of these companies are bubbling over with optimism. Each boldly asserts there is no competition in the niche he is targeting. Experience shows, however, that some niches do not materialize, while others shrink up or disappear.

Nonetheless, it is clear that users are about to have computing choices as never before.

While entrepreneurs are developing new computing concepts and architectures, the establishment — IBM — is making advancements of its own.

"In the next decade, you're going to see tremendous technical progress," declares Pat Toole, vice-president of IBM's Information Systems Division and a member of IBM's corporate management board. He claims that IBM is now filing for 16 patents per day.

Toole says users can anticipate the introduction of the 4M-bit chip running at 65 nsec in the near future. Meanwhile, he says, a 16M-bit chip is on the horizon.

Toole went on to say that 64M- and 256M-bit chips will be able to be made from silicon and current photolithography techniques. After that, photolithography will cease to be adequate. But the Thermal Conduction Module, the heart of IBM's mainframe line, will last as long as silicon is used, according to Toole.

So what could be better? In both new and established computing architectures, improvements are being made at a steady rate. The only limitations would seem to be those of our imaginations in putting the new technology to use.

Gibson is a *Computerworld* senior writer.

# COMPUTER INDUSTRY

INDUSTRY INSIGHT

*Clinton Wilder*

## In the name of justice

We may never know whether IBM now regrets its decision to submit its software licensing differences with Fujitsu to the binding arbitration process. But if it does, the boys from Big Blue should stop gnashing their teeth for a moment and look at the position in which former equity partner Intel now finds itself.

A little more than three years after it first filed a microprocessor copyright infringement suit against NEC, Intel is back at square one. And 15 months and Lord knows how many millions of dollars in legal fees after receiving a favorable ruling in the case, Intel gets to start all over again. All because the judge in the case owned $82 worth of Intel stock.

The intent here is not to argue the legal or ethical merits of NEC's successful challenge to U.S. District Judge William A. Ingram after his stock ownership was disclosed several months ago. It is simply to point out the potential legal labyrinth that can entrap high-tech companies seeking restitution, retribution or justice through the courts.

It's ironic that a case that was supposed to drag on because of the intricacies of microcode will now continue for at least two more years because a judge overlooked a tiny part of his investment portfolio. It is difficult

*Continued on page 104*

# Prime's takeover bid lauded

***Proposed Computervision buy-out would create $1.5B CAD/CAM giant***

BY ROSEMARY HAMILTON
CW STAFF

NATICK, Mass. — Prime Computer, Inc.'s effort last week to carve out a larger stake in the computer-aided design and manufacturing (CAD/CAM) field through a hostile takeover bid for Computervision Corp. was warmly embraced by analysts and some of Prime's current customers.

Computervision, the CAD/CAM industry pioneer that fell on hard times in 1985 and has slowly been making a comeback, did not immediately reject Prime's offer to pay $391.5 million for the company. However, Computervision President and Chief Executive Officer Robert L. Gable issued a statement that he has previously "rejected the idea that there was a technical fit between the companies."

Computervision moved to have a Delaware court affirm the validity of an antitakeover plan approved by stockholders last February that, if invoked, could significantly increase the price Prime would have to pay to complete the buy-out.

The proposed takeover would create a $1.5 billion company with more than half its sales realized from CAD/CAM and related markets. One market research firm said the merger would result in Prime becoming the second largest vendor of CAD/CAM products, behind IBM; another firm with a broader interpretation of the market said Prime would jump from eighth place in the market to third, behind Digital Equipment Corp. and IBM.

In an interview last week, Prime CEO Joe Henson said the takeover attempt comes after "repeated attempts to do this in a friendly manner."

The stock market reacted positively, bidding up Computervision's stock by more than $4 last Monday.

However, Timothy McCollum, a vice-president at Dean Witter Reynolds, Inc., said that while Prime's business system users should not be affected by the proposed merger in the short term, it could present a problem to them in the future.

Prime "could end up focusing too much on the CAD/CAM business," McCollum said. "It's something to watch out for."

If Prime were to concentrate all its resources in the CAD/CAM area, it "might tend to neglect the non-CAD/CAM user," said Louis Bergsagel, assistant data processing manager at Pacific Water Works in Seattle, where Prime systems are used for office automation and data processing. But Bergsagel said he is more inclined to believe that a larger market share for Prime would benefit all users.

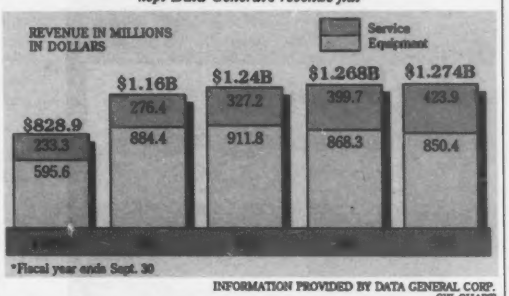
At Philadelphia-based Sandmeyer Steel Co., where Prime systems are used for a variety of business applications and some CAD, data processing manager David Caldwell welcomed the idea of a Prime-Computervision union. Such a union "could mean a lot to us if it goes through," and reliance on Prime as primary

*Continued on page 104*

## Data View

### DG's hardware woes

***A 6.7% decline in equipment sales in the last two years has kept Data General's revenue flat***




*Fiscal year ends Sept. 30

INFORMATION PROVIDED BY DATA GENERAL CORP.
CW CHART

# Retrial for Intel suit

BY JAMES A. MARTIN
CW STAFF

SAN JOSE, Calif. — The federal judge presiding over Intel Corp.'s lawsuit against NEC Home Electronics, Inc. has disqualified himself from presiding over any future hearings and vacated his landmark 1986 decision that computer chip microcode can be copyrighted as

*Continued on page 104*

# Chen, IBM to become partners

BY CLINTON WILDER
CW STAFF

WHITE PLAINS, N.Y. — The first IBM supercomputer moved a major step closer to reality with IBM's recent announcement of a partnership with the company founded in October by former Cray Research, Inc. systems designer Steve Chen.

In its first-ever equity investment in a start-up, IBM will take a minority interest in Supercomputer Systems, Inc. that will basically launch that company. A small group of IBM designers will be assigned to work with Supercomputer Systems to develop an advanced supercomputer. That product will carry the Supercomputer Systems name but will be jointly marketed by Eau Claire, Wis.-based Supercomputer Systems and IBM, according to an IBM spokesman.

"It has always been IBM's intention to be a supercomputer vendor in the long term," said Gary Smaby, a vice-president of Minneapolis investment firm Piper, Jaffray & Hopwood, Inc. "This is truly a unique relationship for IBM, and no company in the supercomputer business should take it lightly."

Although the Supercomputer Systems machine is expected to have a development cycle of about five years, the pairing of Chen's technical talent and IBM's marketing muscle could pose a threat to market leader Cray, analysts said.

"Cray has always said that their long-term competition will be NEC Corp. and IBM," said Jeffry Canin of Hambrecht & Quist, Inc.

# ADR cofounder Goetz resigns

BY ALAN ALPER
CW STAFF

PRINCETON, N.J. — Martin Goetz, cofounder and senior vice-president of Applied Data Research, Inc. (ADR), has resigned to become chief executive officer of Syllogy Corp., a small, privately held systems software firm in Hackensack, N.J.

Goetz's departure was not unexpected, observers said, citing his diminished role at ADR since its acquisition by Ameritech in late 1985. In 1986, Goetz relinquished ADR's presidency to Dennis Strigl, an executive from an Ameritech sister company, to become chief technology officer.

"Clearly, it's not surprising that this happened," said Ken Burke, a software analyst with Alex Brown & Sons, Inc. in Baltimore. "It suggests to me that he was not perfectly comfortable in the new role within the context of a large operation."

Goetz will move to Syllogy at the end of January. In an interview after his announcement, Goetz said he was looking forward to "rolling up my sleeves" at Syllogy and working in a more entrepreneurial environment.

The 25-member firm was started six years ago by Stan Rintel, a cofounder of Syncsort, Inc., and Azra Sasson, a coholder of that company's Syncsort patent. Rintel will remain president of Syllogy, while Sasson will continue as senior vice-president of development.

Goetz said he became uncomfortable with his "advisory role" at ADR because it did not allow him to influence ADR's strategic direction.

Goetz, 57, is considered the driving force behind ADR's technological efforts. With John Bennett, ADR's chief executive officer who recently retired [CW, Dec. 14], Goetz is credited with building ADR into a potent force in the mainframe systems software business. He ran the firm's software product division from its inception in 1968 until being named president in 1984.

"There's never a good time to lose a guy like Marty Goetz," Strigl said, "but we're doing well, and Marty wanted to get back to a position where he had hands-on control of R&D, sales and marketing."

Syllogy, which had revenue of about $1 million in its fiscal year ended Oct. 31, is making a transition from a consultancy to a product-oriented company. The firm recently released its first product, a package that compiles individual changes rather than every instruction in a program [CW, Dec. 14].

Goetz said he hopes to remain involved in systems software development for a long time.

"I want to be like this guy I just read about at J. C. Penney's, who stayed active in the field till he was 90," he concluded.

# Intel suit

CONTINUED FROM PAGE 103

intellectual property.

In a Dec. 18 memorandum, U.S. District Judge William A. Ingram said that because of the $82 worth of Intel stock he unwittingly held at the beginning of the hearings, he would disqualify himself from any past and future decisions in the case. As a result, Ingram's September 1986 ruling that microcode, like software programs, was intellectual property and therefore protected by copyright laws [CW, Sept. 29, 1986] must be reconsidered by another federal court in 1988.

Most analysts, however, said they think another judge will reach the same conclusion. "The original ruling was sound, and when it's retried, microcode will again be confirmed as proprietary," said Drew Peck, a semiconductor analyst with Donaldson, Lufkin & Jenrette, Inc.

NEC counsel Linnet C. Harlan said his company is hoping for a different ruling from the next judge because Ingram did not review new evidence concerning NEC's "clean room" microcode development process before the disclosure of his Intel stock. A clean room development environment is said to protect developers from accidentally or intentionally duplicating another's software codes or microcodes.

The U.S. District Court will assign another judge to hear evidence in a new trial expected to begin in three to six months.

# Posner to cut Borland ties

Ron Posner, a former Ashton-Tate Corp. and Ansa Software executive who joined Borland International, Inc. in July when it bought Ansa, will sever all ties with Borland.

Posner was quoted last week as saying his mission to integrate the Ansa and Borland sales forces is complete and that he may explore new challenges with venture capital-funded software start-ups.

# Wilder

CONTINUED FROM PAGE 103

enough to get an arcane technology dispute resolved before that technology is obsolete in the marketplace. But in the NEC-Intel case, microprocessor technology has taken a backseat to legal technicality.

**What next?**

What will be the next delay? The court stenographer's dog ate the transcript?

The NEC attorneys, one supposes, were simply doing their job. In corporate law, the game is to win for your client, not necessarily to keep the wheels of justice spinning. And that is why the system can be so frustrating and inadequate for resolving computer vendor disputes.

Even before Ingram removed himself and voided all of his prior actions last month, Intel had already become frustrated enough to seek alternate action. The Santa Clara, Calif., chip maker went to the U.S. Customs Service requesting confiscation of the NEC V series microprocessors in dispute.

Customs refused the request. But even if Intel had won, it would have opened another legal can of worms concerning a federal court's jurisdiction over a federal regulatory agency. What fun.

Whether the arbitration path that IBM and Fujitsu elected would have been appropriate for NEC and Intel is hard to say; the cases involve legal issues as disparate as the difference between source code and microcode. But even if IBM is secretly appalled — and crying all the way to the bank — because Fujitsu will see parts of its source code, one has to think that IBM and Fujitsu are in a much better position than their respective counterparts in the U.S. and Japan.

Early in 1987, a column ran in this space titled "The year of the lawyer" [CW, March 2]. Ingram's resignation from the NEC-Intel case — and the prospect of two more years of proceedings — made for a fitting end to it.

Wilder is *Computerworld's* senior editor, computer industry.



# Prime

CONTINUED FROM PAGE 103

CAD supplier would be a distinct possibility, Caldwell said.

The proposed acquistion would bring Computervision stockholders $13.50 per share, according to the initial Prime offer. That price is 40% greater than what Computervision stock was trading for prior to the offer.

Henson would not say whether Prime will offer a higher price if Computervision rejects the initial offer, but he added that Prime "will consider the substance of their communications."

Both Prime and Computervision's CAD/CAM customers should benefit from the deal, analysts said. "Computervision customers will get a vendor that's much more stable," while Prime customers will realize greater options from their vendor, said Charles Foundyller, president of Daratech, Inc., a CAD/CAM market research firm in Cambridge, Mass.

*Senior writer Nell Margolis contributed to this report.*

TAKING CHARGE

*David Ludlum*

# The plot thickens

The year 1988 will see the corporate chain of command stepping up its pressure for information systems managers to think and act like general business managers rather than technologists.

Economic uncertainty will undoubtedly spur management's drive to find more efficient and effective uses for all corporate resources, including information systems.

Market research is just one example of a function crying for a melding of business and technical acumen.

**Who's doing what**

An interesting thing to look for as the year unfolds is whether it will be more common for MIS managers to assume broader business roles or general managers to gain control of MIS organizations.

Some say MIS executives have an advantage in assuming broader business roles because of their exposure to various departments and the departments' interactions. But others are skeptical about the extent to which MIS executives will encroach on other business

*Continued on page 108*

# Management by motivation

***Westinghouse's Hodgson fosters friendly team approach***

BY ELISABETH HORWITT
CW STAFF

W. Edward Hodgson is one MIS executive who can truly claim that his door is always open — because he has no door. The head of computer and communications operations at Westinghouse Electric Corp.'s Morristown, N.J., computer center, Hodgson's cubicle is indistinguishable from those that surround it. He habitually trades barbs with engineers and systems programmers over the walls of adjoining cubicles.

Hodgson's ongoing, easygoing interactions with his staff epitomize the management style he has used to motivate some sweeping changes in communications and computer operations both at Westinghouse and at a growing number of other companies.

The key word is "motivate;" Hodgson gets things done not by forcing his views on people or riding herd on subordinates but by convincing them that going along with his plans is in their own best interest.

Hodgson's primary means of eliciting enthusiasm from his staff is to make them feel like full participants, not just followers, in his schemes.

**A family type**

"He gave us the project" of improving systems availability, says Rom Desai, a senior communications engineer who has worked with Hodgson for eight years. "He gives us assistance when we need it, but he doesn't dictate. He's the friendliest manager I've worked for — a family environment-type person."

Westinghouse communications engineer Hank Barletta agrees. "He only pushes when he needs to," he says. "He says, 'You're on your own' and 'Do it the best way you think' a lot."

On the other hand, Hodgson will not hesitate to push — or even yell — if that is what it takes to get people to join one of his projects. "I'm outspoken. If people resist, I'll threaten them bodily," he jokes.

Hodgson's strong belief in group participation may stem from his family background — he is the oldest of nine children. "We are all friends, and we all show up at reunions," he says.

Hodgson has been at Westinghouse since 1956, when he arrived from IBM. In 1982, when he took over computer and communications operations at Westinghouse's Livingston, N.J., computer center, which has since moved to Morristown, Hodgson made improved service availability a top priority. Although Westinghouse is a 24-hour seven-day-a-week operation, data center services were only available 80% of the time. Hodgson set a goal of 99%-plus availability and reached it through several innovative measures.

One of the most effective was a "pay-for-skills" program. A lot of system downtime resulted from programmers not knowing how to handle routine problems, Hodgson says. "They sat around with their hands in their pockets, waiting for a systems operator to

*Continued on page 107*

PROFILE
**W. Edward Hodgson**

**Position:** *Manager for computers and communications, Westinghouse's Morristown, N.J., computer center.*
**Mission:** *Motivating and training staff; bringing users into network standards efforts.*

# Ex-MIS chief enjoys life as an entrepreneur

BY ROSEMARY HAMILTON
CW STAFF

As 1987 came to a close, Niels Schulz, an MIS director turned business owner, could reflect on three years of some hard-learned lessons. But he has no regrets.

Schulz recently passed the three-year point after launching the Wethersfield, Conn.-based Info-Point Corp., which offers consulting services to users of Hewlett-Packard Co. hardware. For Schulz, Info-Point's beginning marked the end of a 21-year career in MIS and the start of an education in running a business.

Niels Schulz

Schulz says he had toyed with the idea of opening his own firm for many years. When he finally took the plunge, he and his staff faced some initial problems, but he says they have made the necessary adjustments to the business world.

The biggest hurdle was selling. "From an intellectual standpoint, we understood it, but we had never done it," he says of his staff, all of whom had worked in MIS. "In the first year, I think we gave away as much as we sold."

*Continued on page 108*

## CALENDAR

### JAN. 10-16

**77th Annual National Retail Merchants Association Convention.** New York, Jan. 10-13 — Contact: Registrar, NRMA, c/o Galaxy Conferences, Inc., P.O. Box 3918, Frederick, Md. 21701.

**International Symposium and Exposition on Electronic Imaging Devices and Systems '88.** Los Angeles, Jan. 10-15 — Contact: Society for Imaging Science and Technology, 70003 Kilworth Lane, Springfield, Va. 22151.

**Neural Network Applications Conference.** Los Angeles, Jan. 11-12 — Contact: Russell Webb, Institute for International Research, Inc., Suite 1212, 310 Madison Ave., New York, N.Y. 10017.

**10th Annual Conference on Computer Graphics.** San Diego, Jan. 13-15 — Contact: Carol Every, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

**Designing the Debit Card Account.** Miami, Jan. 13-15 — Contact: Linda Munday, Meeting Coordinator, Electronic Funds Transfer Association, Suite 1000, 1726 M St. N.W., Washington, D.C. 20036.

**Strategic Planning for New Technologies: The Role of the Planner in the 1990s.** New York, Jan. 15 — Contact: Aida Rivera, Executive Programs, 1221 Avenue of the Americas, New York, N.Y. 10020.

**Amiexpo.** Los Angeles, Jan. 16-18 — Contact: Amiexpo, Suite 301, 211 E. 43rd St., New York, N.Y. 10017.

### JAN. 17-23

**Third Conference on Hypercube Concurrent Computers and Applications.** Pasadena, Calif., Jan. 19-20 — Contact: Patricia McLane, Jet Propulsion Laboratory, MS 180-205, Pasadena, Calif. 91109.

**1988 Optical Disk Systems Conference.** Phoenix, Jan. 20-22 — Contact: Jean O'Toole, CAP International, One Snow Road, Marshfield, Mass. 02050.

**Third Annual Technology in The Law Practice: The Lawyer's Personal Workstation.** Dallas, Jan. 20-23. — Contact: The Conference Desk, Inc., 3701 Fairmount St., Dallas, Texas 75219.

**Military and Space Graphics: New Applications and Future Requirements.** Cape Canaveral, Fla., Jan. 21 — Contact: Tanya Wilson, National Computer Graphics Association, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

### JAN. 24-30

**Conference on Interactive Videodisk Systems.** Clearwater, Fla., Jan. 24-26 — Contact: Institute for Graphic Communication, Inc., 375 Commonwealth Ave., Boston, Mass. 02115.

**The Desktop Communications Conference.** Anaheim, Calif., Jan. 25-27 — Contact: Infonetics, Inc., Desktop Communications Conference, Suite 100, 3235 Kifer Road, Santa Clara, Calif. 95051.

**Measuring Quality and Productivity in a Data Processing Environment.** Orlando, Fla., Jan. 25-27 — Contact: Quality Assurance Institute, 9222 Bay Point Drive, Orlando, Fla. 32819.

**Communications Networks '88.** Washington, D.C., Jan. 25-28 — Contact: IDG Conference Management Group, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

**Florida Instructional Computing Conference.** Kissimmee, Fla., Jan. 25-28 — Contact: McRae and Co., P.O. Box 12187, Tallahassee, Fla. 32317.

**Second Annual Conference on Improving Productivity in EDP System Development.** Tucson, Ariz., Jan. 25-29 — Contact: Applied Computer Research, Inc., P.O. Box 9280, Phoenix, Ariz. 85068.

**DB2/SQL Users Group Meeting.** New York, Jan. 26 — Contact: DB2/SQL Users Bulletin, Box 560, Wall St. Station, New York, N.Y. 10005.

### JAN. 31-FEB. 6

**Financial Investment Management Exposition & Conference.** Los Angeles, Feb. 2-3 — Contact: FIM-West, P.O. Box 4440, New York, N.Y. 10163.

**Society For Computer Simulation Multiconference.** San Diego, Feb. 3-5 — Contact: SCS, P.O. Box 17900, San Diego, Calif. 92117.

**Strategic Planning for New Technologies: The Role of the Planner in the 1990s.** Chicago, Feb. 5 — Contact: Aida Rivera, Executive Programs, 1221 Avenue of the Americas, New York, N.Y. 10020.

### FEB. 7-13

**Building an Effective Standards Program.** Orlando, Fla., Feb. 8-10 — Contact Quality Assurance Institute, 9222 Bay Point Drive, Orlando, Fla. 32819.

**International Conference on Computers and Law.** Santa Monica, Calif., Feb. 8-10 — Contact: Michael Krieger, ICCL 88, P.O. Box 24619, Los Angeles, Calif. 90024.

**Focus on Operations-VIII: Profile of the Professional.** Las Vegas, Feb. 8-11 — Contact: International Association for Computer Operations Managers, 742 E. Chapman Ave., Orange, Calif. 92666.

**Data Storage Interface Week.** San Jose, Calif., Feb. 8-12 — Contact: Technology Forums, Suite 260, 80 W. 78th St., Chanhassen, Minn. 55317.

**CAP '88 Conference and Exhibition on Desktop and Workstation Publishing Systems.** Washington, D.C., Feb. 9-11 — Contact: Computer Aided Publishing, Suite 200, 90 W. Montgomery Ave., Rockville, Md. 20850.

**Usenix Technical Conference.** Dallas, Feb. 9-12 — Contact: Usenix Conference Office, P.O. Box 385, 16951 Pacific Coast Highway, Sunset Beach, Calif. 90742.

**Second Conference on Applied Natural Language Processing.** Austin, Texas, Feb. 9-12 — Contact: Donald Walker, Bell Communications Research, MRE 2A379, 445 South St., Morristown, N.J. 07960.

**Interex Computing Management Symposium.** Anaheim, Calif., Feb. 10-13 — Contact: Interex Conference Department, 680 Almanor Ave., Sunnyvale, Calif. 94086.

### FEB. 11-20

**Dexpo East 88, The 14th DEC-Compatible Exposition & Conference.** New York, Feb. 16-18 — Contact: Susan Werlinich, Expoconsul International, Inc., 3 Independence Way, Princeton, N.J. 08540.

**Resocom '88.** Paris, Feb. 16-19 — Contact: IDG Conference Management Group, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

### FEB. 21-27

**11th Annual Personal Computing Forum.** Naples, Fla., Feb. 21-24 — Contact: Sylvia Franklin, Edventure Holdings, 375 Park Ave., New York, N.Y. 10152.

**The Fifth Annual Electronic Printing Systems Conference.** San Jose, Calif., Feb. 21-25 — Contact: S. Thomas Dunn, EPS '88 Conference Chairman, Suite 1, 1855 E. Vista Way, Vista, Calif. 92084.

## LOCAL HAPPENINGS

### NORTHEAST

**Northport, N.Y., Jan. 12.** Data Processing Management Association (DPMA), Suffolk County Chapter. Local Area Networks, with The Computer Station. Windjammer Restaurant, Rt. 25A. 6 p.m. Contact: Monika Mac Lean, Suffolk County DPMA, 257 Depot Road, Huntington Station, N.Y. 11746.

**New York, Jan. 13.** Association for Women in Computing, New York Chapter. Documentation for Hardware and Software panel discussion. Manufacturers Hanover Trust Co., 270 Park Ave. 5:30 p.m. Contact: AWC, P.O. Box 2293, Grand Central Station, New York, N.Y. 10163.

**Harrisburg, Pa., Jan. 13.** Association for Systems Management (ASM), Central Pennsylvania Chapter. Local Area Networks, with Thomas Slick of Tasco, Inc. O'Hara's Restaurant. 5:30 p.m. Contact: Mark Anderson, 809 Acri Road, Mechanicsburg, Pa. 17055.

**Boston, Jan. 15.** Society for Management of Professional Computing. Digital Equipment Corp. Directions in Distributed Computing. Anthony's Pier 4. 11:45 a.m. Contact: SMPC, 715 Boylston St., Boston, Mass. 02116.

### SOUTHEAST

**Chamblee, Ga., Jan. 12.** ASM, Atlanta Chapter. Data Planning Concepts, with Barbara Helmer of Data Architects. Holiday Inn Chamblee-Dunwoody, 4386 Chamblee-Dunwoody Road. 5:30 p.m. Contact: Jane Roberts, HBO & Co., Suite 1000, 1 Ravinia Drive, Atlanta, Ga. 30346.

**Charlotte, N.C., Jan. 21.** ASM, Queen City Chapter. Managing for the Future, with Robert E. Roberson of the University of South Carolina. Cosmos Steak House, 5100 E. Independence Blvd. 6 p.m. Contact: Robert Yearwood, Metro Information Services, Suite 140, 7 Parkway Plaza, Charlotte, N.C. 28217.

**Lafayette, La., Jan. 21.** DPMA, Acadiana Chapter. Monthly meeting. Evangeline Steak House, Highway 167 S. 6:30 p.m. Contact: Debra Billeaud, Guaranty Bank and Trust Co., 4th Floor, 200 W. Congress, Lafayette, La. 70502.

### MIDWEST

**Des Moines, Iowa, Jan. 11.** ASM, Des Moines Chapter. Assertive/Aggressive/Passive Communication, with Kay Prihoda of Growth Systems. Howard Johnson Inn, Merle Hay Road. 5 p.m. Contact: Joleen Montag, Integrated Resources Life Insurance Co., 3737 Westown Pkwy., West Des Moines, Iowa 50265.

**Sylvania, Ohio, Jan. 13.** ASM, Toledo Chapter. Artificial Intelligence, with Richard Aeh of AT&T. The Someplace Else. 5:30 p.m. Contact: Dale R. Briggs, Systems Division, Marathon Oil Co., 539 S. Main St., Findlay, Ohio 45840.

**Kalamazoo, Mich., Jan. 13.** DPMA, Southwestern Michigan Chapter. Monthly meeting. Contact: William J. Hosken, The Upjohn Co., 7171 Portage Road, Kalamazoo, Mich. 49001.

### WEST

**Walnut Creek, Calif., Jan. 20.** ASM, East Bay Chapter. Monthly dinner meeting. Contact: ASM, 32 Robert Road, Orinda, Calif. 94563.

**San Francisco, Jan. 21.** Association for Computing Machinery, Golden Gate Chapter. The Changing Role of Supercomputers, with Bence Gerber. Seven Hills, 252 California. 5:30 p.m. Contact: James M. Spitze, The Systems Consulting Consortium, Inc., P.O. Box 2331, Stanford, Calif. 94305.

**Santa Monica, Calif., Jan. 23.** DPMA, Los Angeles Chapter. 1988 Installation Dinner Dance. The Chronicle Restaurant, 2640 Main St. 6 p.m. Contact: DPMA, P.O. Box 1047, Hollywood, Calif. 90078.

# Motivation

CONTINUED FROM PAGE 105

show up." Hodgson hit on a training program to enable programmers to handle a greater number of situations themselves. But he solicited reactions before going ahead with his plan, and many people told him frankly that they saw no advantage in further education, since Westinghouse awarded promotions strictly on a seniority basis.

Hodgson solved that problem by convincing top management to award promotions to employees who completed training courses. This needed a "selling job," he says. "Management thought we would give away the store — that everyone would get a senior position."

Partly to quiet these fears, Hodgson instituted tests to ensure that employees had actually acquired the skills they were studying. "Only we had to call it 'learning reinforcement,' because it's illegal to give that type of test," Hodgson chuckles.

Desai got promoted from operator to his present position through the pay-for-skills project. Before Hodgson, "You worked, got paid, went home and there was no improvement," he recalls.

At first sight, Hodgson has a visionary look, with intense blue eyes and a full head of white hair. After minutes of conversation, however, the main impression he gives is of enjoying himself. Relaxed and direct, he laughs with pleasure at the new independence of his programmers and operators. "We hardly ever hear from them now; they can do most things themselves," he says.

Now Hodgson is cajoling and harrying communications managers in other companies to unite in an effort to influence vendors' standards-development efforts [CW, Dec. 21].

As with the service improvement project, he is faced with a two-way sales job. "The vendors and carriers are afraid of giving away the store by giving users too much control of the standards effort," he says. And communications managers who are already working 10-hour days are reluctant to spend extra time sitting in on meetings, Hodgson says. "They say, 'My company doesn't want to spend the money or the time,' but in five years, standards will save a lot of both," he adds. He still is looking for a better means of motivating his colleagues.

Hodgson's dedication to the standards issues is reflected in his favorite pastime — "sitting in front of a hot fire on a rainy night with a cup of hot coffee and going over standards documents."

# Ex-MIS chief

CONTINUED FROM PAGE 105

In the second year of business, Info-Point worked on polishing its act and, Schulz says, became experienced in "being evaluated as a vendor." The next step, completed in November, was to hire a person with sales and marketing experience.

The company also became a reseller of manufacturing software from MCBA, Inc. as well as of three other microcomputer packages for manufacturing applications. In addition, the company markets point-of-sale microcomputer software that it designed.

A second problem that emerged for Schulz has not yet been resolved. He considers himself a hands-on MIS professional, and what appealed to him most about a consulting firm was the on-site client work.

But as Info-Point's president, he finds he is responsible for a long list of administrative and sales duties. As the client list has grown, Schulz has found he is spending less time working directly with customers and more time overseeing the business.

### Rather be consulting

"If I had my way, I'd do [consulting] all the time," he says. "But, on average, I spend 30% to 50% of my week on consulting." Ideally, Schulz says, he would like to spend about 80% of his week wearing his consultant's hat.

To achieve this ideal, the first step will be to off-load the sales work to his new hire. Eventually, he will delegate more administrative duties to his staff.

Despite drawbacks, Schulz says he is pleased with his move out of MIS. He says the client relationships are refreshing after dealing with management within a corporation. The work is not an ongoing process for clients, he says. "It's a set project, and so the objectives are much clearer. We get projects done much faster," he adds.

Schulz describes himself as a person who likes not having to answer to someone.

"If you see some work that you don't want, you don't have to take it," he says. "If you're receiving a weekly paycheck, you can't do that."

Info-Point can be considered a spin-off from Loctite Corp., a maker of industrial adhesives. The company was undergoing a worldwide conversion to IBM hardware. There had been several different vendors' equipment being used at various divisions. At corporate headquarters, Schulz was responsible for an HP 3000 installation.

### Employer was first client

Schulz wanted to continue working in an HP 3000 environment. That desire came together with his notion of a consulting firm. He put forth a proposal to management that would allow him to leave Loctite with six staffers. They would set up Info-Point as an independent business that would spend nearly all its time servicing Loctite during the conversion from the HP system to IBM. The time spent with Loctite would gradually decrease during the next few years, until the company had completely moved over to IBM.

The plan was approved by Loctite, and Schulz was in business. In the first year, the company won 15 small assignments in addition to its work on the Loctite account, Schulz says. In 1987, while the Loctite relationship was phased out, the company logged nearly 60 consulting assignments, he said.

"I have found that it's turned out to be a lot more work than I expected," Schulz says. "I'd say that if you're going out on your own to get away from working harder, don't do it."



# Plot thickens

CONTINUED FROM PAGE 105

functions and stress the role of personal characteristics rather than organizational issues.

James Emery, a professor at The Wharton School in Pennsylvania, says information systems managers may take on other information-intensive activities, but the ability to handle broader duties will depend more on their individual capabilities.

### Managers make a move

Michael Vitale, an assistant professor at Harvard Business School in Cambridge, Mass., says he expects general managers to run information systems more often than MIS managers and to take over business functions.

Likely candidates are general managers whose departments stand to gain the most from information systems, Vitale says.

Similarly, MIS executive recruiter Herb Halbrecht recently predicted that most of those employees who apply systems to strategic business needs will be general managers rather than systems veterans.

MIS managers who broaden their roles will do so on the basis of their abilities, style, charisma and general-business smarts, Halbrecht says.

A recurring theme of this scenario involves the needs of the person who applies information systems to business, which may well be determined by the characteristics of the individuals on hand rather than any grand corporate strategy.

Ludlum is *Computerworld's* senior editor, management.

# MIS looks ahead to a mixed bag

*Finance, defense jobs tight; but manufacturing, service industries grow*

BY ALAN RADDING
SPECIAL TO CW

While 1988 may not be the best year to break into financial services, other areas, such as manufacturing, will provide new employment opportunities for MIS professionals, according to recruiters.

"1988 is going to be a good year, but not as strong as 1987," predicts Jack Erdlen, president of Management Dimensions, a high-tech recruiting firm in Wellesley, Mass.

Not all the attention is focused on financial services. There are fears that employment in government may drop because of budget cutbacks, new defense treaties may curtail defense industry employment and pressure to contain health care costs may restrict employment opportunities there.

By contrast, a resurgence in manufacturing, based in part on the weakened U.S. dollar and stronger exports, and the widely reported growth of the services segment of the economy point to areas of opportunity.

"Defense has been stagnant for the past two years, but I think there is some optimism. The new treaties shouldn't affect R&D where most of the computer professionals are employed," says Howard Levin, director and owner of RSVP Services, a Cherry Hill, N.J.-based recruiting firm.

Erdlen sees changes coming in the defense industry, including cutbacks, but those changes are in the long-term. Frank Goldschmidt, data processing placement manager at Robert Half Accountemps of Boston, reports current openings among several defense-related clients in his area.

### Health care fit and trim

Goldschmidt also sees strong growth potential in the health care industry, which is part of the growing service-oriented economy. Erdlen says that the pharmaceutical industry continues to expand, while Levin senses a shift in the manufacturing industries. "They have been down, but I see a change coming," Levin says.

Early evidence suggests that MIS professionals will enjoy strong demand in most industries. For example, Skip Battle, managing director at Arthur Andersen, a Chicago-based MIS consulting firm that serves a number of industries, notes, "We have a bigger recruiting budget than last year."

According to a recent survey of 13,000 U.S. firms by Manpower, Inc., an international employment firm based in Milwaukee, hiring for all professions, including MIS, in the first quarter of 1988 will be as strong as in any comparable period in the last five years.

Overall, 21% of the firms surveyed intend to increase employment during the first quarter of 1988, compared with 19% a year ago. Only 12% of the firms intend to cut back employment in the first quarter, compared with 14% last year.

In fact, things appeared to be very strong in the months following the October stock market crash. This past November was "pretty good, and going into 1988 things look very well," Levin says. "By contrast, 1987 started out very slowly. The first five months were not good, but we had a booming summer."

Employment professionals see 1987 as a strong year overall for MIS hiring, the best in nearly 2½ years, according to Majorie Freedland, senior vice-president at Deutsch, Shea & Evans, a New York-based communications and research firm that tracks the High Technology Recruitment Index (HTRI).

For the third quarter of 1987, the HTRI hit 119, and the single-month figure for September reached 128. For the previous two years, the HTRI never passed 108 in the third quarter. The HTRI is based on the volume of recruitment advertising directed to engineers and scientists in major U.S. newspapers and technical journals each month.

**HIRING FOR ALL PROFESSIONS, including MIS, in the first quarter of 1988 will be as strong as in any comparable period in the last five years.**

### But watch out

Freedland's enthusiasm is countered by her warning that the employment outlook as reflected by the HTRI "may be buffeted by the current gyrations in the financial area," she says. In addition, cutbacks in federal spending and a major drop in consumer and business spending, which could trigger recessionary trends, could push down the HTRI in the coming months.

According to the U.S. Department of Labor, the financial services industry (including insurance and real estate) currently employs 41,396 computer systems analysts and electronic data processing professionals. That number is expected to climb to 70,587 by 2000, a 70.5% increase. The industry also employs 68,332 programmers, which is expected to climb to 107,696 by 2000 for a 57.6% increase.

The Manpower survey suggests that the financial services industry, including insurance and real estate, will continue its five-year growth spurt in most regions of the country. According to its survey, 20% of the financial services companies plan to increase hiring, while only 8% will decrease employment.

The jobs for computer systems analysts and EDP professionals will rise 33% by 2000 in the manufacturing sector, while programmers will see a 26.3% increase, according to the Labor Department. In the transportation, communications and utilities sector, systems analysts and EDP professionals will enjoy a 62% increase by the end of the century, while the number of programmers will increase 41%.

In the area of wholesale and retail trade, systems analysts and EDP professionals will experience an 87.6% gain, while the programmers trade will increase 63.5%. In the services sector, systems analysts will enjoy a 140% gain. Opportunities for programmers in the services area will increase 110%.

Radding is a Boston-based author specializing in business and technology.

# "Simply put, Computerworld delivers just what we're looking for: top-quality job applicants."

Roger Fraumann
Staff Director
Lachman Associates, Inc.
Westmont, IL

Roger Fraumann is Staff Director for Lachman Associates, Inc. (LAI) of Westmont, Illinois. It is one of the largest privately held computer systems software consulting and development firms in the United States. And Roger is pleased to report that plans call for continuing the 50% annual growth every year for the next five years.

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*"We get about 20 responses per ad, and what really counts is that those responses yield at least two quality applicants per ad,"* Roger explains. *"Overall, a higher percentage of quality people respond to our ads in Computerworld, as opposed to what other publications deliver. Computerworld works for us."*

Plus, Roger has found added incentive to advertise in Computerworld: *"The same ad that runs nationally in Computerworld costs twice as much to run in the Chicago Tribune, a local newspaper,"* he notes.

Since LAI began advertising in Computerworld, the company has gone from 50 to 130 full-time professionals. *"We've been in Computerworld about every other week. And with the company's plans for growth for the next five years, we're going to continue advertising in Computerworld,"* says Roger.

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# "We filled 75% of the positions with responses from our first ad in Computerworld."

*Bjorn Nordemo*
*Vice President*
*Data Arts & Sciences, Inc.*
*Weston, MA*

Bjorn Nordemo is Vice President of Data Arts & Sciences, Inc. (DASI), a contract software agency based in Weston, MA. Although they place people in permanent positions, DASI most often places 'contract programming personnel' — consultants who fit special niches for short or long term commitments in corporations in the New England area.

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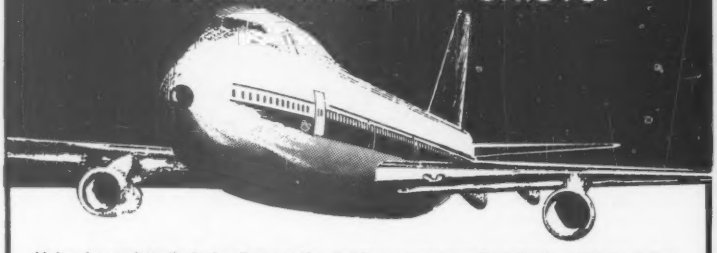

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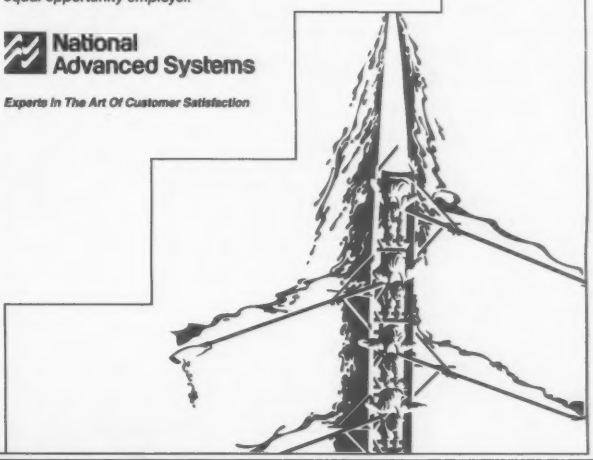

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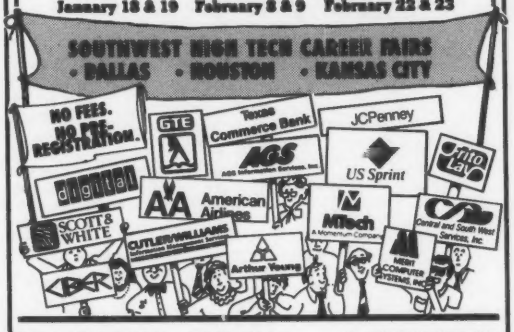


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# MARKETPLACE

## Heavy trading as supply increases

by ELIZABETH LOZANO
DATA SUPPLIED BY
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The market experienced a flurry of activity this week, as a number of lessors, VARs and large users "dumped" both real and vapor-ware IBM 089s and 339s. As anticipated, dealers scrambled for these boxes, while the prices and profits soared as in previous years, there is a scramble as some traders dump equipment for end-of-year cash. Others are buying before their fiscal year's budget is real located. Thanks to the tax system, this makes an active market at year end.

The IBM PC experienced an increase in trading volume. The basic machine with 256K RAM, 2 floppy drives, monochrome monitor, adapter and DOS closed down slightly, at $700. The XT 086 closed down slightly as well, at $1300, experiencing similar conditions. The AT models, in contrast, continue to hold high values and to be in extremely short supply. The AT 099 model held firm at $2300, while the AT 339 closed up $50, at $3150. PS/2 tradig continues to be sluggish as a whole, although the models 50 and 60 are experiencing a marginal increase in demand. Fact is few users want the new PS/2.

Compaq trading was a mixed bag this week. The original luggable, the Portable I closed down at $750. The Portable II closed up at $1725, with users settling for this machine in the face of a short supply of Portable IIIs. The Portable III closed up at $2625. The luggable 10 megabyte machine, the Plus, closed even at $1200, experiencing a decrease in both demand and supply. In contrast, Compaq 286 and 386 trading volume was high. The Deskpro 286 closed at $2200, with a mid-week increase of supply leading to a marginal drop in price by the end of the week. The 386 Deskpro closed at $4300 with short supply conditions throughout the week.

Macintosh trading was heavy. The 512 closed even at $800, with supply and demand evenly matched. The 512e was also steady, but trading volume was on the up-swing and the price is expected to fall from its current value of this popular machine. The SE closed at $1950, with few machines available on the MacUsed market.

## Closing prices report

### for the week ending December 18, 1987

| Machine | Closing Price | Recent High | Recent Low |
|---|---|---|---|
| IBM PC 076 | $ 700 | 900 | 575 |
| IBM XT 086 | 1300 | 1425 | 900 |
| IBM XT 089 | 1950 | 2050 | 1300 |
| IBM AT 099 | 2200 | 2900 | 2250 |
| IBM AT 339 | 3150 | 3300 | 2800 |
| Compaq Portable I | 750 | 975 | 650 |
| Compaq Portable II | 1725 | 1900 | 1550 |
| Compaq Portable III | 2625 | 2750 | 2200 |
| Compaq Plus | 1200 | 1300 | 1200 |
| Compaq Deskpro 286 | 2200 | 2500 | 2250 |
| Compaq Deskpro 386 | 4300 | 4600 | 4000 |
| Macintosh 512 | 800 | 875 | 650 |
| Macintosh 512e | 1000 | 1100 | 875 |
| Macintosh Plus | 1350 | 1450 | 1300 |
| Macintosh SE | 1950 | 2150 | 1700 |
| Macintosh II | 4000 | 4200 | 3500 |
| HP Laserjet Plus | 1200 | 1300 | 975 |
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# In-house staff loss is contractors' gain

*Budget cutbacks afford opportunities for course and materials vendors*

BY LAURA DIDIO
SPECIAL TO CW

Budgets for MIS and end-user training, particularly in the financial services, insurance and oil industries, are expected to be tight this year, according to training coordinators.

But the vendors of training courses and materials see cutbacks of in-house training staffs within these companies as an opportunity to expand their services.

"Our clients are adding personal computers, but they are not increasing the training support staff," says Leon Weisburgh, chairman of the New York-based Personal Computer Learning Centers of America, which supplies on-site training to Fortune 500 firms.

**Using your wits**

Budget cuts mean that MIS departments must seek alternative ways to provide training. For example, at Unum Life Insurance Co. in Portland, Maine, the training staff is seeking in-house volunteers to provide additional training.

"We have been scaling down our MIS training and have been told to hold the line on costs," instructor Sue Redkey says.

Another alternative to hiring an in-house staff is to contract with training vendors. "We could be on an unparalleled growth curve if we can justify the cost of training at individual companies," says Tony Keating, district manager for Naperville, Ill.-based Deltak Training Corp., another independent training firm that serves the Fortune 500.

Personal Computer Learning Centers' Weisburgh says that cutbacks of MIS training staffs are proving a boon for his company. "The fact that so many firms are downsizing their in-house commitments to information systems training helped our business grow 65% in 1987, and we may see our revenue double next year," he says.

Cuts in budget allocations for training are the result of sluggish business conditions and mergers rather than direct reductions in training, Weisburgh says.

"Whenever there is a drop in profits, training budgets are the first to come under the knife," he says. "When you see a merger, you can be sure that cuts will follow — when Philip Morris took over General Foods and Texaco and Penzoil merged, there was massive consolidation."

Deltak's Keating also sees belt-tightening. "In the past couple of years, everything related to MIS funding has been questioned, examined and must be justified," he says. "A few years ago, it was easier for us to get contract renewals and put new training programs in place. But that situation is being severly curtailed."

Likewise, Linda Rode, president and owner of DP Training Resources in New York, says that MIS training budgets will not expand in 1988. "They will hold to present levels or be lower."

Rode's company counts many large banks and securities firms among its clients, and those firms were the hardest hit by October's stock market crash. "People are still conducting the training that needs to be done," she says. "So far, the cutbacks have not been on the scale of those that occurred seven or eight years ago during the 1981 recession. Now, corporations are being more cautious about how they spend their training dollars, and the market is very competitive."

To adjust to the new environment, Rode's company plans to expand its services to address several different types of training. "We will offer MIS training in applications development software and CASE programming tools," she says. "We also see a significant demand in the office environment for DB2 training."

**Hiring, not firing**

Although many companies are cutting back or freezing their training budgets, there are exceptions to this trend, even in the service industries. MIB, Inc., a Westwood, Mass.-based service bureau for life insurance companies, will increase its budget this year, according to Ron Millman, education and development specialist.

The Technical Learning Center for the New York telephone company is also beefing up its MIS training curriculum counter to the general trend. "The main reason for the increase is that just about everyone in the organization is getting personal computers," says Al Jung, associate director at the center. "In 1987, the number of training courses we offered was greater than the aggregate total number of courses we offered for the previous three years of 1984 through 1986."

Training at the center encompasses end-user and technical instruction on PCs, minicomputers and mainframes.

DiDio is a free-lance writer based in Boston.

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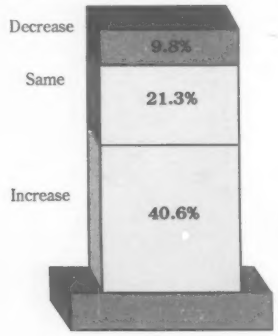
## TRENDS

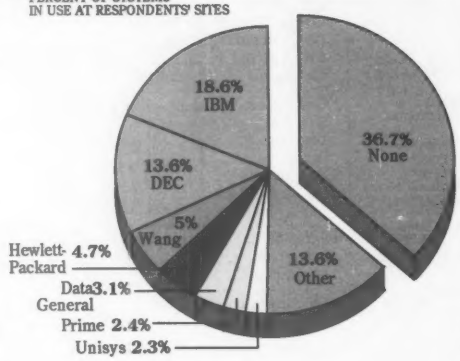
# Departmental systems

### Spending boost may not lead to new installations

SYSTEMS PURCHASING PLANS OF 1,045 COMPANIES SURVEYED

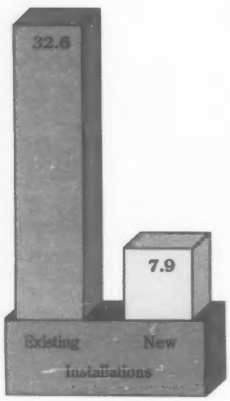



PERCENT OF SYSTEMS IN USE AT RESPONDENTS' SITES



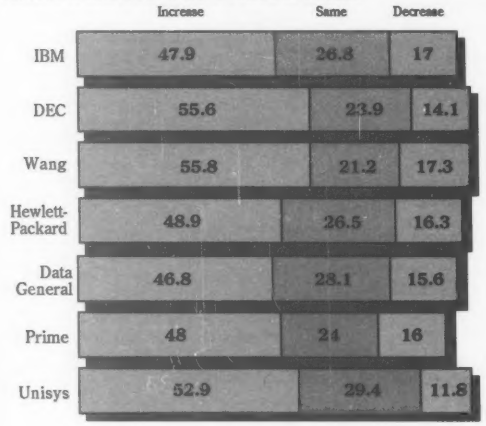

### Users are buying

PERCENT OF RESPONDENTS PLANNING TO INCREASE SPENDING




### Wang comes back; DEC still strong

PERCENT OF RESPONDENTS' BUYING PLANS BY SUPPLIER




INFORMATION PROVIDED BY THE SIERRA GROUP

There will not be many new customers for departmental computer vendors next year, which means the battle between IBM and Digital Equipment Corp. will become even more fierce, according to The Sierra Group in Tempe, Ariz.

A recent Sierra Group survey of 1,045 MIS executives showed that 32.6% of user sites with departmental systems plan on buying more next year. But only 7.9% of sites without departmental systems plan on making a purchase.

"This market is not expanding," said Merrily Shinyeda, president of The Sierra Group. "Vendors are going to have to take business from competitors to grow."

The increasing use of personal computers and local-area networks is one of several reasons the departmental market has reached a saturation point, Shinyeda said.

As vendors fight over a nearly stagnant market, DEC will be more successful at stealing business than rival IBM in 1988, the survey said. Currently, IBM's share of the departmental market is ahead of DEC's by 5%.

DEC continues to grab business at accounts that have traditionally belonged to IBM, Shinyeda noted. Of IBM mainframe shops surveyed with departmental systems, 14.8% had DEC equipment. Nearly 31% used IBM departmental systems.

In addition, DEC users surveyed gave their vendor a higher satisfaction rating than IBM users. DEC tied with Hewlett-Packard Co. for first place, while IBM came in third.

Shinyeda also said more DEC accounts are planning purchases for the upcoming year than IBM sites. "IBM has an uphill battle" in 1988, Shinyeda concluded.

However, both IBM and DEC have more to do than worry about each other. There is a second tier of departmental computer vendors that share almost 18% of the market. Among this group of five vendors, Wang Laboratories, Inc. tops the list with a 5% market share. HP, Prime Computer, Inc., Unisys Corp. and Data General Corp. are closely positioned, with each holding between 2.3% and 4.7% market shares.

The Sierra Group predicted that HP will emerge as the strongest second-tier competitor, primarily because it scored so high in user satisfaction.

ROSEMARY HAMILTON

## INSIDE LINES

**Done Deal?** It looks like Ashton-Tate, which has been romancing SQL DBMS vendors in search of an OS/2 server product, has finally scored. According to well-connected (isn't that what SQL is all about?) sources, Ashton-Tate came to terms with tiny Interbase Software Corp. in Tyngsborough, Mass. Ashton-Tate, which has promised an OS/2, SQL-based server product, has apparently invested in Interbase and will obtain the marketing rights to a still-unfinished OS/2 server product. Interbase will remain free to market its products to other areas, such as the engineering marketplace. The deal is expected to be formally announced in one month.

**PFS:Gone.** Janelle Bedke, one of the computer industry's highest ranking female executives, has resigned as president of Software Publishing Corp. to pursue personal interests. In a related move, company investor Jack Melchor took over the chairman's post from founder Fred Gibbons, who will replace Bedke as president. Melchor, a Software Publishing board member, is also a director of 3Com and Zitel. Bedke will remain on the board.

**Don't open till Jan. 5?** Withholding the name of the first customer and the actual shipment date, Prime Computer recently claimed to have met its deadline by delivering its high-end, dual-processor 6550 superminicomputer before the end of the fourth-quarter of 1987. Prime is expected to release further details on Jan. 5.

**New wrapping paper.** Graphics supercomputer developer Dana Computer in Sunnyvale, Calif., has changed its name to Ardent Computer Corp., citing trademark conflicts with similarly named firms. Allen Michels, the former Convergent Technologies founder who started Dana, said the name Ardent "reflects the zeal with which our team has met the challenge of defining and creating the first of a new class of computer." Silicon Valley lore has it that Dana was named after the San Jose, Calif., street address of the home where the company was founded.

**Indigestion.** One-third of all computer industry acquisitions end up being divested by the acquirer because they don't work out, according to a new study by the Cerberus Group. The Frenchtown, N.J.-based research firm concluded that the highest success ratio came to buyers making deals to round out product lines, acquire technology or extended markets and product lines in which the buyer already participated.

**Lumps of coal in the stocking?** Heavy competition at the high end, dwindling profit margins and decreasing sales are troubling the T1 industry. Network Equipment Technology (NET), once the undisputed ruler of the high-end T1 networking market, is reportedly losing some ground — and contracts — to Digital Communications Associates and Timeplex.

The company is said to be cutting prices, and therefore profit margins, to boost sales; additionally, the contract for IBM to resell NET equipment has reportedly hit some bumps, with IBM reputedly accusing NET of undercutting its bids and NET, in turn, claiming that IBM is encroaching on its own direct-sales outlets.

Meanwhile, T1 vendors Infotron, General Datacomm and Paradyne are all potential candidates for acquisition, one source suggested, since their sales have been dropping and their margins thinning. General Datacomm in particular is said to be in deep trouble, with some recent layoffs and disappointing sales reported.

**Throw me a lifeline.** One user of Microsoft's Works recently abandoned ship after trying to learn the program for two weeks. He said he was drowning in its 800 pages of documentation. "It's a neat program, but in the race to have new features, Microsoft has fogotten what normal people can do," another user said.

**Jumping in.** Data General and Xerox said they will announce a new PC-based desktop composition product early in January. The three-tiered product will be targeted at corporate publishing.

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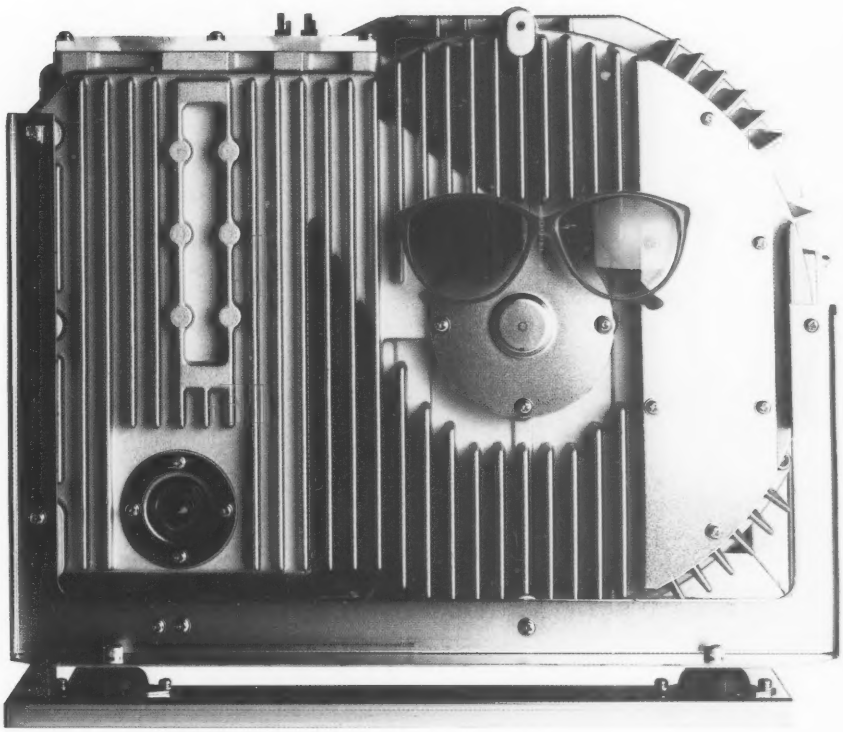

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